

=> fil reg

FILE 'REGISTRY' ENTERED AT 11:27:39 ON 21 AUG 2007

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STRUCTURE FILE UPDATES: 20 AUG 2007 HIGHEST RN 945102-95-4

DICTIONARY FILE UPDATES: 20 AUG 2007 HIGHEST RN 945102-95-4

New CAS Information Use Policies, enter HELP USAGETERMS for details.

TSCA INFORMATION NOW CURRENT THROUGH June 29, 2007

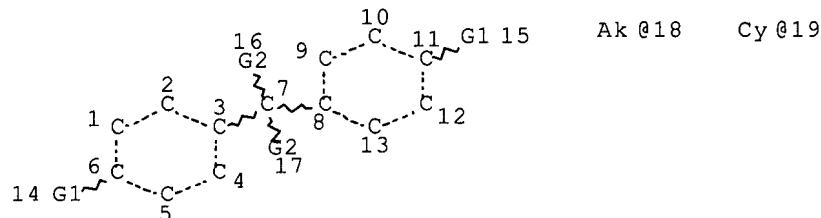
Please note that search-term pricing does apply when conducting SmartSELECT searches.

REGISTRY includes numerically searchable data for experimental and predicted properties as well as tags indicating availability of experimental property data in the original document. For information on property searching in REGISTRY, refer to:

<http://www.cas.org/support/stngen/stndoc/properties.html>

=> d que stat l7

L3 STR



VAR G1=O/C

VAR G2=18/19

NODE ATTRIBUTES:

DEFAULT MLEVEL IS ATOM

GGCAT IS SAT AT 18

GGCAT IS UNS AT 19

DEFAULT ECLEVEL IS LIMITED

GRAPH ATTRIBUTES:

RING(S) ARE ISOLATED OR EMBEDDED

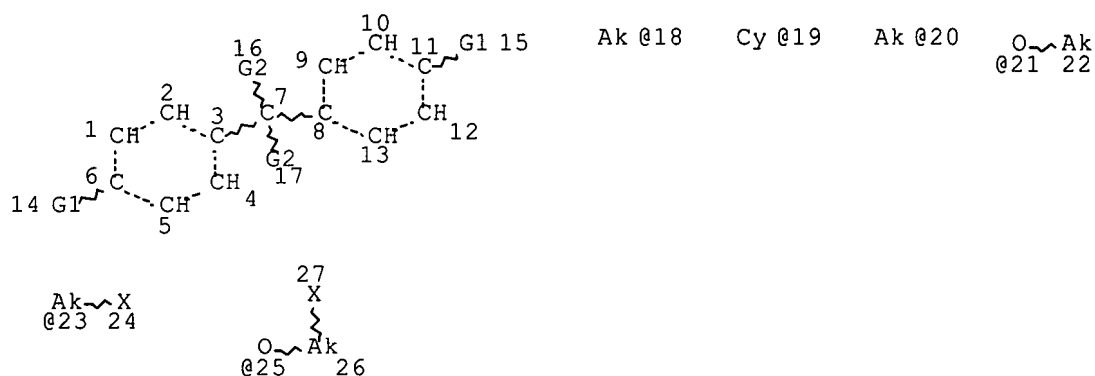
NUMBER OF NODES IS 19

STEREO ATTRIBUTES: NONE

L4 (92245)SEA FILE=REGISTRY SSS FUL L3

L5 SCR 2043 OR 1918 OR 2021 OR 1992

L6 STR



VAR G1=OH/20/21/23/25

VAR G2=18/19

NODE ATTRIBUTES:

CONNECT IS E1 RC AT 20

CONNECT IS E1 RC AT 22

DEFAULT MLEVEL IS ATOM

GGCAT IS SAT AT 18

GGCAT IS UNS AT 19

GGCAT IS SAT AT 22

GGCAT IS SAT AT 26

DEFAULT ECLEVEL IS LIMITED

GRAPH ATTRIBUTES:

RING(S) ARE ISOLATED OR EMBEDDED

NUMBER OF NODES IS 27

STEREO ATTRIBUTES: NONE

L7 1321 SEA FILE=REGISTRY SUB=L4 SSS FUL L6 NOT L5

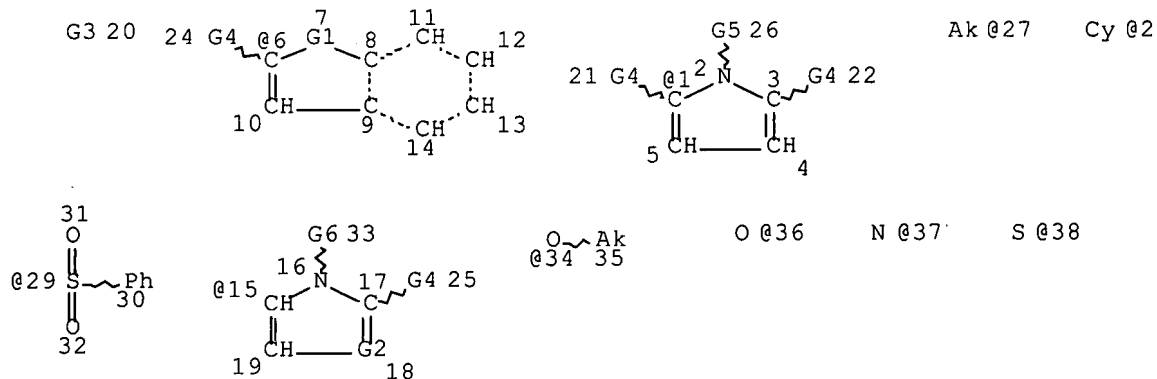
100.0% PROCESSED 8067 ITERATIONS

1321 ANSWERS

SEARCH TIME: 00.00.01

=> d que stat 110

L8 STR



8

Page 1-B

VAR G1=36/37/38

VAR G2=N/O/S

VAR G3=1/6/15

VAR G4=H/27/28/34

VAR G5=H/27/28/29

VAR G6=H/27/O/N

NODE ATTRIBUTES:

CONNECT IS E1 RC AT 27

CONNECT IS E1 RC AT 28

CONNECT IS E1 RC AT 35

CONNECT IS E2 RC AT 36

CONNECT IS E2 RC AT 37

CONNECT IS E2 RC AT 38

DEFAULT MLEVEL IS ATOM

GGCAT IS UNS AT 28

DEFAULT ECLEVEL IS LIMITED

GRAPH ATTRIBUTES:

RSPEC I

NUMBER OF NODES IS 37

STEREO ATTRIBUTES: NONE

L9 SCR 2043 OR 2127 OR 1918 OR 1841 OR 2016 OR 2026

L10 2512 SEA FILE=REGISTRY SSS FUL L8 NOT L9

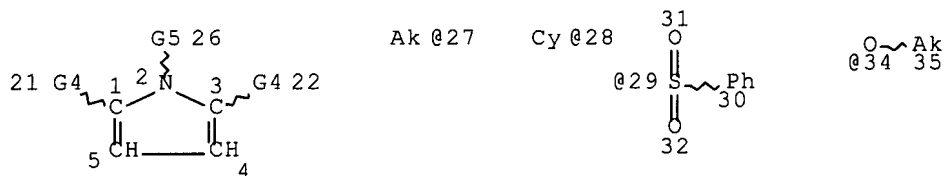
100.0% PROCESSED 1476556 ITERATIONS

2512 ANSWERS

SEARCH TIME: 00.00.13

=> d que stat 122

L22 STR



VAR G4=H/27/28/34

VAR G5=H/27/28/29

NODE ATTRIBUTES:

CONNECT IS E1 RC AT 27

CONNECT IS E1 RC AT 28

CONNECT IS E1 RC AT 35

DEFAULT MLEVEL IS ATOM

GGCAT IS UNS AT 28

DEFAULT ECLEVEL IS LIMITED

GRAPH ATTRIBUTES:

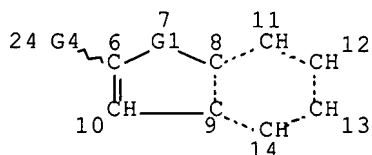
RSPEC I

NUMBER OF NODES IS 16

STEREO ATTRIBUTES: NONE

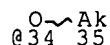
=> d que stat 119

L19 STR



Ak @27

Cy @28



O @36

N @37

S @38

VAR G1=36/37/38

VAR G4=H/27/28/34

NODE ATTRIBUTES:

CONNECT IS E1 RC AT 27

CONNECT IS E1 RC AT 28

CONNECT IS E1 RC AT 35

CONNECT IS E2 RC AT 36

CONNECT IS E2 RC AT 37

CONNECT IS E2 RC AT 38

DEFAULT MLEVEL IS ATOM

GGCAT IS UNS AT 28

DEFAULT ECLEVEL IS LIMITED

GRAPH ATTRIBUTES:

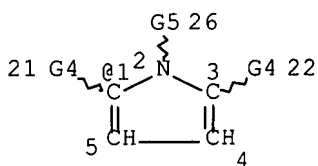
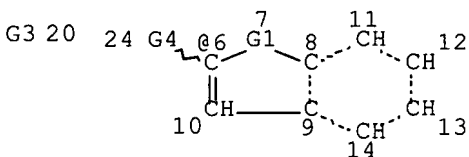
RSPEC I

NUMBER OF NODES IS 17

STEREO ATTRIBUTES: NONE

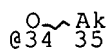
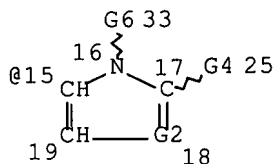
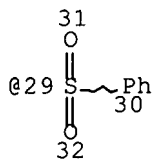
=> d que stat 128

L8 STR



Ak @27

Cy @2



O @36

N @37

S @38

Page 1-A

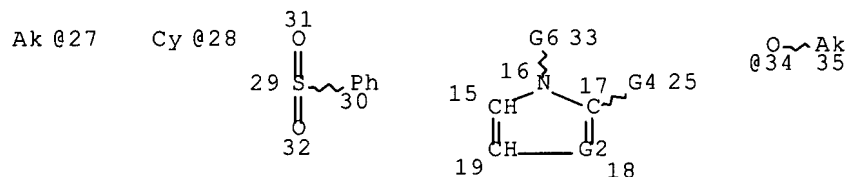
8

Page 1-B

VAR G1=36/37/38
 VAR G2=N/O/S
 VAR G3=1/6/15
 VAR G4=H/27/28/34
 VAR G5=H/27/28/29
 VAR G6=H/27/O/N
 NODE ATTRIBUTES:
 CONNECT IS E1 RC AT 27
 CONNECT IS E1 RC AT 28
 CONNECT IS E1 RC AT 35
 CONNECT IS E2 RC AT 36
 CONNECT IS E2 RC AT 37
 CONNECT IS E2 RC AT 38
 DEFAULT MLEVEL IS ATOM
 GGCAT IS UNS AT 28
 DEFAULT ECLEVEL IS LIMITED

GRAPH ATTRIBUTES:
 RSPEC I
 NUMBER OF NODES IS 37

STEREO ATTRIBUTES: NONE
 L9 SCR 2043 OR 2127 OR 1918 OR 1841 OR 2016 OR 2026
 L10 2512 SEA FILE=REGISTRY SSS FUL L8 NOT L9
 L20 STR



VAR G2=N/O/S
 VAR G4=H/27/28/34
 VAR G6=H/27/O/N
 NODE ATTRIBUTES:
 CONNECT IS E1 RC AT 27
 CONNECT IS E1 RC AT 28
 CONNECT IS E1 RC AT 35
 DEFAULT MLEVEL IS ATOM
 GGCAT IS UNS AT 28
 DEFAULT ECLEVEL IS LIMITED

GRAPH ATTRIBUTES:
 RSPEC I
 NUMBER OF NODES IS 15

STEREO ATTRIBUTES: NONE
 L28 0 SEA FILE=REGISTRY SUB=L10 SSS FUL L20

100.0% PROCESSED 3 ITERATIONS
 SEARCH TIME: 00.00.01

0 ANSWERS

=> d his nofile

(FILE 'HOME' ENTERED AT 09:35:32 ON 21 AUG 2007)

FILE 'REGISTRY' ENTERED AT 09:36:00 ON 21 AUG 2007
 ACT WEI272/A

 L1 STR
 L2 92245 SEA SSS FUL L1

 ACT WEI272S1/A

L3 STR
 L4 (92245)SEA SSS FUL L3
 L5 SCR 2043 OR 1918 OR 2021 OR 1992
 L6 STR
 L7 1321 SEA SUB=L4 SSS FUL L6 NOT L5

 ACT WEI272A1/A

L8 STR
 L9 SCR 2043 OR 2127 OR 1918 OR 1841 OR 2016 OR 2026
 L10 2512 SEA SSS FUL L8 NOT L9

FILE 'HCAPLUS' ENTERED AT 09:41:20 ON 21 AUG 2007

L11 1 SEA ABB=ON PLU=ON US2004185347/PN
 D SCA
 SEL RN

FILE 'REGISTRY' ENTERED AT 09:42:31 ON 21 AUG 2007

L12 54 SEA ABB=ON PLU=ON (463-79-6/BI OR 10377-51-2/BI OR
 105-58-8/BI OR 108-32-7/BI OR 108-88-3/BI OR 117-80-6/BI
 OR 1192-62-7/BI OR 1193-79-9/BI OR 126-33-0/BI OR
 127-63-9/BI OR 131651-65-5/BI OR 13243-65-7/BI OR
 1330-20-7/BI OR 14024-11-4/BI OR 14283-07-9/BI OR
 162684-16-4/BI OR 16851-82-4/BI OR 18424-17-4/BI OR
 1889-59-4/BI OR 21324-40-3/BI OR 271-89-6/BI OR 27359-10-
 0/BI OR 28122-14-7/BI OR 28452-93-9/BI OR 29935-35-1/BI
 OR 33454-82-9/BI OR 35363-40-7/BI OR 3680-02-2/BI OR
 37220-89-6/BI OR 39300-70-4/BI OR 4265-27-4/BI OR
 4437-85-8/BI OR 462-06-6/BI OR 524-42-5/BI OR 5535-43-3/B
 I OR 5535-48-8/BI OR 56525-42-9/BI OR 616-38-6/BI OR
 620-32-6/BI OR 623-53-0/BI OR 623-96-1/BI OR 625-86-5/BI
 OR 67-71-0/BI OR 693-98-1/BI OR 71-43-2/BI OR 7439-93-2/B
 I OR 7447-41-8/BI OR 7474-83-1/BI OR 77-77-0/BI OR
 7791-03-9/BI OR 80-05-7/BI OR 90076-65-6/BI OR 95-15-8/BI
 OR 96-49-1/BI)

L13 4 SEA ABB=ON PLU=ON L10 AND L12
 D SCA

L14 1 SEA ABB=ON PLU=ON L7 AND L12
 D SCA

FILE 'HCAPLUS' ENTERED AT 09:48:44 ON 21 AUG 2007

L15 QUE ABB=ON PLU=ON ELECTROLY?
 L16 44 SEA ABB=ON PLU=ON L7(L)L15
 L17 337 SEA ABB=ON PLU=ON L10(L)L15

FILE 'LREGISTRY' ENTERED AT 09:51:50 ON 21 AUG 2007

L18 STR L8
 L19 STR L8
 L20 STR L8

FILE 'REGISTRY' ENTERED AT 11:12:12 ON 21 AUG 2007

L21 50 SEA SUB=L10 SSS SAM L18
L22 STR L18
L23 50 SEA SUB=L10 SSS SAM L22
L24 1022 SEA SUB=L10 SSS FUL L22
SAV L24 WEI272S2/A
L25 31 SEA SUB=L10 SSS SAM L19
L26 627 SEA SUB=L10 SSS FUL L19
SAV L26 WEI272S3/A
L27 0 SEA SUB=L10 SSS SAM L20
L28 0 SEA SUB=L10 SSS FUL L20

FILE 'HCAPLUS' ENTERED AT 11:18:48 ON 21 AUG 2007

L29 14979 SEA ABB=ON PLU=ON L24
L30 21163 SEA ABB=ON PLU=ON L26
L31 206 SEA ABB=ON PLU=ON L17 AND L29
L32 54 SEA ABB=ON PLU=ON L17 AND L30
L33 QUE ABB=ON PLU=ON NONAQU# OR NONAQUEOUS OR NON(W)AQUEOU
S
L34 10429 SEA ABB=ON PLU=ON L33(2A)L15
L35 5 SEA ABB=ON PLU=ON L16 AND L34
L36 22 SEA ABB=ON PLU=ON L31 AND L34
L37 15 SEA ABB=ON PLU=ON L32 AND L34
L38 QUE ABB=ON PLU=ON (LI OR LITHIUM?) (2A)BATTER?
L39 10 SEA ABB=ON PLU=ON (L16 NOT L25) AND L38
L40 10 SEA ABB=ON PLU=ON L35 OR L39
L41 18 SEA ABB=ON PLU=ON L36 AND (1840-2003)/PY,PRY,AY
L42 14 SEA ABB=ON PLU=ON L37 AND (1840-2003)/PY,PRY,AY

=> fil hcap

FILE 'HCAPLUS' ENTERED AT 11:28:03 ON 21 AUG 2007

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FILE COVERS 1907 - 21 Aug 2007 VOL 147 ISS 9

FILE LAST UPDATED: 20 Aug 2007 (20070820/ED)

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This file contains CAS Registry Numbers for easy and accurate substance identification.

=> d l40 ibib abs hitstr hitind 1-10

L40 ANSWER 1 OF 10 HCAPLUS COPYRIGHT 2007 ACS on STN

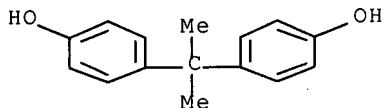
ACCESSION NUMBER: 2007:317324 HCAPLUS Full-text
 DOCUMENT NUMBER: 146:405104
 TITLE: **Lithium** ion power **battery**
 with colloidal electrolyte for electric vehicles
 INVENTOR(S): Huang, Suiyang
 PATENT ASSIGNEE(S): Peop. Rep. China
 SOURCE: Faming Zhuanli Shenqing Gongkai Shuomingshu,
 22pp.
 CODEN: CNXXEV
 DOCUMENT TYPE: Patent
 LANGUAGE: Chinese
 FAMILY ACC. NUM. COUNT: 1
 PATENT INFORMATION:

PATENT NO.	KIND	DATE	APPLICATION NO.	DATE
-----	----	-----	-----	
CN 1929185	A	20070314	CN 2005-10037059	200509 08
PRIORITY APPLN. INFO.:			CN 2005-10037059	200509 08

AB The title **lithium** ion power **battery** comprises electrolyte of colloidal polymer continuously arranged in the diaphragm between anodes and cathodes and in the micropores of the electrode plates, and a high-strength metal-coated plastic film composite material as outer shell. The colloidal polymer electrolyte is prepared from one or more kinds of monomers (selected from vinylidene fluoride, Me methacrylate, acrylonitrile, etc.) by thermal polymerization or electrochem. polymerization. The battery has a single cell battery capacity of 400 Ah, a discharge current of 3-10 C, and a power d. of 1000 W/kg, and can be used for elec. vehicle, pilotless aircraft, satellite communication device, rocket launcher, elec. yacht, submarine telecommunication power supply, etc.

IT 80-05-7, Bisphenol A, uses
 RL: TEM (Technical or engineered material use); USES (Uses)
 (**lithium** ion power **battery** with colloidal
electrolyte for elec. vehicles)

RN 80-05-7 HCAPLUS
 CN Phenol, 4,4'-(1-methylethylidene)bis- (CA INDEX NAME)



CC 52-2 (Electrochemical, Radiational, and Thermal Energy Technology)
 Section cross-reference(s): 49

ST **lithium** ion power **battery** colloid polymer
 electrolyte elec vehicle

IT Carbon black, uses
 Fluoropolymers, uses
 Polyesters, uses
 RL: TEM (Technical or engineered material use); USES (Uses)
 (**lithium** ion power **battery** with colloidal
electrolyte for elec. vehicles)

IT Secondary **batteries**

(lithium, lithium ion; lithium ion
power **battery** with colloidal electrolyte for elec.
vehicles)

IT 75-38-7, Vinylidene fluoride 79-06-1, Acrylamide, reactions
80-62-6, Methyl methacrylate 88-12-0, reactions 96-33-3, Methyl
acrylate 97-88-1, Butyl methacrylate 97-90-5, Ethylene glycol
dimethacrylate 107-13-1, Acrylonitrile, reactions 107-25-5,
Methyl vinyl ether 108-05-4, Vinyl acetate, reactions 116-15-4,
Hexafluoropropylene 141-32-2, Butyl acrylate 208-96-8,
Acenaphthylene 872-36-6, Vinylene carbonate 1337-81-1, Vinyl
pyridine 2274-11-5, Ethylene glycol diacrylate 2495-37-6, Benzyl
methacrylate

RL: RCT (Reactant); RACT (Reactant or reagent)
(lithium ion power **battery** with colloidal
electrolyte for elec. vehicles)

IT 78-67-1 94-36-0, Benzoyl peroxide, reactions

RL: RGT (Reagent); RACT (Reactant or reagent)
(lithium ion power **battery** with colloidal
electrolyte for elec. vehicles)

IT 80-05-7, Bisphenol A, uses 92-52-4, Biphenyl, uses
144-62-7, Oxalic acid, uses 7429-90-5, Aluminum, uses 7439-93-2,
Lithium, uses 7440-50-8, Copper, uses 7550-35-8, Lithium bromide
7782-42-5, Graphite, uses 9002-84-0, Polytetrafluoroethylene
9002-88-4, Polyethylene 9003-07-0, Polypropylene 9010-79-1,
Ethylene-propylene copolymer 10377-51-2, Lithium iodide
12597-68-1, Stainless steel, uses 24937-79-9, Poly(1,1-
difluoroethylene) 39457-42-6, Lithium manganese oxide
52627-24-4, Cobalt lithium oxide 933445-86-4, Boron lithium
phosphorus tin oxide

RL: TEM (Technical or engineered material use); USES (Uses)
(lithium ion power **battery** with colloidal
electrolyte for elec. vehicles)

L40 ANSWER 2 OF 10 HCAPLUS COPYRIGHT 2007 ACS on STN

ACCESSION NUMBER: 2006:926710 HCAPLUS Full-text

DOCUMENT NUMBER: 146:166181

TITLE: **Nonaqueous electrolyte** based
on 4,4'-(hexafluoroisopropylidene)diphenol for
lithium batteries comprising
organic solvent where lithium salt is dissolved
and 4,4'-(hexafluoroisopropylidene)diphenol

INVENTOR(S): Kim, Hak Soo; Jeon, Jong Ho; Park, Myoung Kook;
Kim, Jong Seob

PATENT ASSIGNEE(S): Cheil Industries Inc., S. Korea

SOURCE: Repub. Korean Kongkae Taeho Kongbo, No pp. given
CODEN: KRXXA7

DOCUMENT TYPE: Patent

LANGUAGE: Korean

FAMILY ACC. NUM. COUNT: 1

PATENT INFORMATION:

PATENT NO.	KIND	DATE	APPLICATION NO.	DATE
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KR 2005062212	A	20050623	KR 2003-94218	200312 20

PRIORITY APPLN. INFO.: KR 2003-94218

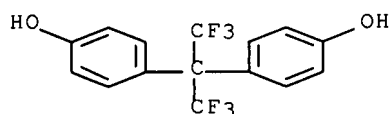
200312
20

AB This **nonaq. electrolyte** solution has little thickness expansion during the initial full charge of a battery and little thickness change at high temperature The **nonaq. electrolyte** solution comprises 100 parts by weight of an organic solvent, with a Li salt is dissolved by 0.8-2.0 M; and 0.1-10 parts by weight of 4,4'-(hexafluoroisopropylidene)diphenol. Preferably the organic solvent is a mixture of a cyclic carbonate-based solvent and a linear carbonate-based solvent. Preferably the organic solvent comprises further at least one kind of solvent selected from the group consisting of Pr acetate, MeOAc, EtOAc, BuOAc, Me propionate, Et propionate and fluorobenzene.

IT **1478-61-1**, 4,4'-(Hexafluoro isopropylidene) diphenol
 RL: TEM (Technical or engineered material use); USES (Uses)
 (in **nonaq. electrolyte** based on
 (fluoroisopropylidene)diphenol for **lithium batteries**)

RN 1478-61-1 HCAPLUS

CN Phenol, 4,4'-[2,2,2-trifluoro-1-(trifluoromethyl)ethylidene]bis-
 (CA INDEX NAME)



IC ICM H01M010-40

CC 52-2 (Electrochemical, Radiational, and Thermal Energy Technology)

ST **nonaq electrolyte** fluoroisopropylidene phenol
lithium battery

IT Secondary batteries
 (lithium; **nonaq. electrolyte** based
 on (fluoroisopropylidene)diphenol for **lithium batteries**)

IT Battery electrolytes
 (**nonaq. electrolyte** based on
 (fluoroisopropylidene)diphenol for **lithium batteries**)

IT 79-20-9, Methyl acetate 105-37-3, Ethyl propionate 109-60-4,
 Propyl acetate 123-86-4, Butyl acetate 141-78-6, Ethyl acetate,
 uses 462-06-6, Fluorobenzene 554-12-1, Methyl propionate
1478-61-1, 4,4'-(Hexafluoro isopropylidene) diphenol
 RL: TEM (Technical or engineered material use); USES (Uses)
 (in **nonaq. electrolyte** based on
 (fluoroisopropylidene)diphenol for **lithium batteries**)

L40 ANSWER 3 OF 10 HCAPLUS COPYRIGHT 2007 ACS on STN
 ACCESSION NUMBER: 2006:169817 HCAPLUS Full-text

DOCUMENT NUMBER: 144:236263

TITLE: Secondary **nonaqueous-electrolyte** batteries with electrolytes
 containing brominated aromatic compounds

INVENTOR(S): Nakanishi, Shinji; Koshina, Shigeru

PATENT ASSIGNEE(S): Matsushita Electric Industrial Co., Ltd., Japan

SOURCE: Jpn. Kokai Tokkyo Koho, 43 pp.
 CODEN: JKXXAF

DOCUMENT TYPE: Patent

LANGUAGE: Japanese

FAMILY ACC. NUM. COUNT: 1

PATENT INFORMATION:

PATENT NO.	KIND	DATE	APPLICATION NO.	DATE
JP 2006054167	A	20060223	JP 2005-182531	20050622
US 2006292450	A1	20061228	US 2005-177600	20050711
CN 1700502	A	20051123	CN 2005-10083295	20050713
PRIORITY APPLN. INFO.:			JP 2004-205672	A 20040713

OTHER SOURCE(S): MARPAT 144:236263

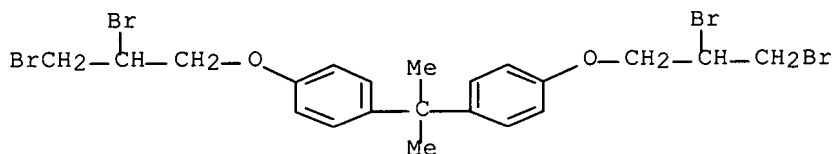
AB The title batteries are equipped with electrolytes containing Br compds. of aromatic compds. chosen from (1) bromodiphenyl compds., (2) bromodiphenyl ether compds., (3) bromodiphenoxyalkanes, (4) bromophthalic anhydride compds., (5) bromophthalic acid compds., (6) bromophthalimide compds., (7) bromobisphenol A compds., (8) bromobisphenol A carbonate oligomers, (9) bromobisphenol A epoxy resins, (10) bromophenylene oxide polymers, (11) bromobenzylacrylate polymers, (12) bromostyrene polymers, (13) brominated acetophenylene polymers, (14) bromophenylmaleimide compds., (15) bromobenzylacrylate compds., (16) bromostyrene compds., and (17) bromobenzylisocyanurate compds. The batteries suppress temperature increase and gas generation and provide high storage stability, safety, and long cycle life.

IT 876746-46-2

RL: DEV (Device component use); USES (Uses)
 (electrolytes containing brominated aromatic compds. for secondary nonaq.-electrolyte batteries)

RN 876746-46-2 HCAPLUS

CN Benzene, 1,1'-(1-methylethylidene)bis[bromo-4-(2,3-dibromopropoxy)-
 (9CI) (CA INDEX NAME)



2 (D1-Br)

CC 52-2 (Electrochemical, Radiational, and Thermal Energy Technology)

ST brominated arom compd electrolyte secondary nonaq
 battery safety

IT Aromatic compounds

RL: DEV (Device component use); USES (Uses)
 (bromo arenes; electrolytes containing brominated aromatic compds. for secondary nonaq.-electrolyte batteries)

IT Polycarbonates, uses

Polyoxyphenylenes

RL: DEV (Device component use); USES (Uses)

(electrolytes containing brominated aromatic compds. for secondary
nonaq.-electrolyte batteries)

IT Secondary **batteries**

(**lithium**; secondary **nonaq.-**

electrolyte batteries with electrolytes containing brominated
aromatic compds.)

IT Battery **electrolytes**

Safety

(secondary **nonaq.-electrolyte** batteries with

electrolytes containing brominated aromatic compds.)

IT 632-79-1, Tetrabromophthalic anhydride 1163-19-5,
Decabromodiphenyl ether 1333-52-4D, brominated 1335-06-4
3623-90-3 4162-45-2, Tetrabromobisphenol A-bis-(2-hydroxyethyl
ether) 9003-53-6D, Polystyrene, brominated 10513-96-9
13654-09-6 20566-35-2 21850-44-2, Tetrabromobisphenol A
bis(2,3-dibromopropyl ether 25327-89-3, Tetrabromobisphenol
A-bis-(allyl ether) 25587-82-0, Poly(2,4,6-tribromostyrene)
26040-45-9, Bistetrabromophthalimide 26264-10-8 27479-65-8
27815-51-6, Carbonic acid-tetrabromobisphenol A copolymer
27858-07-7, Octabromodiphenyl 28774-93-8 30606-83-8,
Dibromophthalic anhydride 30606-84-9 31780-26-4, Dibromostyrene
32536-52-0, Octabromodiphenyl ether 32588-76-4 36355-01-8,
Hexabromodiphenyl 36483-60-0, Hexabromodiphenyl ether
36563-47-0, Monobromodiphenyl ether 40039-93-8,
Epichlorohydrin-tetrabromobisphenol A copolymer 40088-45-7
40088-47-9, Tetrabromodiphenyl ether 53563-56-7, Dibromodiphenyl
ether 59447-55-1, Pentabromobenzylacrylate 59447-57-3,
Poly(pentabromobenzyl)acrylate 61368-34-1 69990-65-4
74082-93-2, Poly(dibromophenylene oxide) 81218-06-6 89670-71-3
100678-03-3, Methylenebistetrabromophthalimide 106287-34-7,
Tribromophenylmaleimide 108660-55-5 111145-75-6 152155-74-3
182763-37-7 876656-04-1 876656-05-2 876656-07-4 876656-09-6
876656-10-9, Poly(3,5-dibromostyrene) 876746-34-8 876746-35-9D,
brominated 876746-36-0 876746-37-1 876746-38-2,
Dibromodiphenoxyethane 876746-39-3 876746-40-6 876746-42-8
876746-43-9 876746-44-0 876746-45-1 **876746-46-2**
876746-47-3 876746-48-4 876746-49-5 876746-50-8 876746-51-9
876746-52-0 876746-53-1

RL: DEV (Device component use); USES (Uses)

(**electrolytes** containing brominated aromatic compds. for
secondary **nonaq.-electrolyte** batteries)

L40 ANSWER 4 OF 10 HCAPLUS COPYRIGHT 2007 ACS on STN

ACCESSION NUMBER: 2005:394066 HCAPLUS Full-text

DOCUMENT NUMBER: 142:433099

TITLE: Electrolyte for rechargeable **lithium**
battery

INVENTOR(S): Kim, Jin-Hee; Kim, Jin-Sung

PATENT ASSIGNEE(S): Samsung SDI Co., Ltd., S. Korea

SOURCE: Eur. Pat. Appl., 50 pp.

CODEN: EPXXDW

DOCUMENT TYPE: Patent

LANGUAGE: English

FAMILY ACC. NUM. COUNT: 1

PATENT INFORMATION:

PATENT NO.	KIND	DATE	APPLICATION NO.	DATE
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EP 1528616 A2 20050504 EP 2004-90417 200411
01
EP 1528616 A3 20070103
R: AT, BE, CH, DE, DK, ES, FR, GB, GR, IT, LI, LU, NL, SE, MC,
PT, IE, SI, LT, LV, FI, RO, MK, CY, AL, TR, BG, CZ, EE, HU,
PL, SK, HR, IS, YU
KR 2005041859 A 20050504 KR 2004-65773 200408
20
JP 2005142157 A 20050602 JP 2004-318586 200411
01
US 2005142448 A1 20050630 US 2004-980116 200411
01
CN 1770541 A 20060510 CN 2004-10104744 200411
01
PRIORITY APPLN. INFO.: KR 2003-76913 A 200310
31
KR 2004-65773 A 200408
20

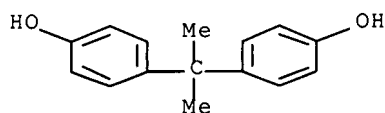
OTHER SOURCE(S): MARPAT 142:433099

AB Disclosed is an electrolyte for a rechargeable **lithium battery** including: a first additive having an oxidation potential of 4.1 to 4.6 V; a second additive having an oxidation potential of 4.4 to 5.0 V; and a nonaq. organic solvent; and a lithium salt.

IT 80-05-7, Bisphenol A, uses 1478-61-1,
4,4'-(Hexafluoroisopropylidene)diphenol
RL: MOA (Modifier or additive use); USES (Uses)
(**electrolyte** for rechargeable **lithium battery**)

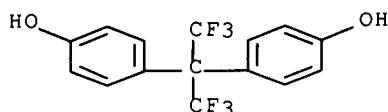
RN 80-05-7 HCAPLUS

CN Phenol, 4,4'-(1-methylethylidene)bis- (CA INDEX NAME)



RN 1478-61-1 HCAPLUS

CN Phenol, 4,4'-[2,2,2-trifluoro-1-(trifluoromethyl)ethylidene]bis-
(CA INDEX NAME)



IC ICM H01M010-40
 CC 52-2 (Electrochemical, Radiational, and Thermal Energy Technology)
 Section cross-reference(s): 38
 ST electrolyte rechargeable **lithium battery**
 IT Alkenes, uses
 RL: MOA (Modifier or additive use); USES (Uses)
 (C2-8, copolymer with propylene; electrolyte for rechargeable
lithium battery)
 IT Battery electrolytes
 (electrolyte for rechargeable **lithium battery**
)
 IT Aromatic hydrocarbons, uses
 Esters, uses
 Ethers, uses
 Ketones, uses
 RL: DEV (Device component use); USES (Uses)
 (electrolyte for rechargeable **lithium battery**
)
 IT Fluoropolymers, uses
 RL: MOA (Modifier or additive use); USES (Uses)
 (electrolyte for rechargeable **lithium battery**
)
 IT Styrene-butadiene rubber, uses
 RL: MOA (Modifier or additive use); USES (Uses)
 (electrolyte for rechargeable **lithium battery**
)
 IT Secondary **batteries**
 (lithium; electrolyte for rechargeable **lithium**
battery)
 IT 71-43-2, Benzene, uses 96-49-1, Ethylene carbonate 98-95-3,
 Nitrobenzene, uses 105-58-8, Diethyl carbonate 108-32-7,
 Propylene carbonate 108-88-3, Toluene, uses 108-90-7,
 Chlorobenzene, uses 462-06-6, Fluorobenzene 463-79-6D, Carbonic
 acid, ester 616-38-6, Dimethyl carbonate 623-53-0, Ethyl methyl
 carbonate 623-96-1, Dipropyl carbonate 1330-20-7, Xylene, uses
 4437-85-8, Butylene carbonate 7439-93-2, Lithium, uses
 7440-44-0, Carbon, uses 7447-41-8, Lithium chloride, uses
 7791-03-9, Lithium perchlorate 10377-51-2, Lithium iodide
 12190-79-3, Cobalt lithium oxide (CoLiO₂) 14024-11-4, Lithium
 tetrachloroaluminate 14283-07-9, Lithium tetrafluoroborate
 18424-17-4, Lithium hexafluoroantimonate 21324-40-3, Lithium
 hexafluorophosphate 25496-08-6, Fluorotoluene 27359-10-0,
 Trifluorotoluene 29935-35-1, Lithium hexafluoroarsenate
 33454-82-9, Lithium triflate 35363-40-7, Ethyl propyl carbonate,
 uses 37220-89-6, Aluminum lithium oxide 56525-42-9, Methyl
 propyl carbonate, uses 90076-65-6 132843-44-8
 RL: DEV (Device component use); USES (Uses)
 (electrolyte for rechargeable **lithium battery**
)
 IT 79-41-4D, Methacrylic acid, copolymer with methacrylic alkyl ester
80-05-7, Bisphenol A, uses 80-09-1, Bisphenol S
 106-38-7, 4-Bromotoluene 106-43-4, 4-Chlorotoluene 115-07-1D,
 Propylene, copolymer with C2-8 olefin 352-32-9, 4-Fluorotoluene
 530-48-3, 1,1-Diphenyl ethylene 772-00-9, 4-Phenyl-1,3-dioxane
 843-55-0, 4,4'-Cyclohexylidene bisphenol 1075-20-3,
 4-Phenyl-1,3-dioxolane **1478-61-1**, 4,4'-
 (Hexafluoroisopropylidene)diphenol 9000-11-7 9003-39-8,
 Polyvinylpyrrolidone 9004-34-6D, Cellulose, compds. 9004-57-3,

Ethyl cellulose 9004-62-0 9004-64-2, Hydroxypropyl cellulose
 9004-65-3, Hydroxypropyl methyl cellulose 9004-67-5, Methyl
 cellulose 9062-14-0, Ethyl hydroxypropyl cellulose 10192-62-8,
 Bisphenol A diacetate 24937-79-9, PVDF 25549-84-2, Polysodium
 acrylate

RL: MOA (Modifier or additive use); USES (Uses)
 (electrolyte for rechargeable lithium
 battery)

IT 9003-55-8

RL: MOA (Modifier or additive use); USES (Uses)
 (styrene-butadiene rubber; electrolyte for rechargeable
 lithium battery)

L40 ANSWER 5 OF 10 HCAPLUS COPYRIGHT 2007 ACS on STN

ACCESSION NUMBER: 2004:932030 HCAPLUS Full-text

DOCUMENT NUMBER: 141:398152

TITLE: Electrolyte solution for secondary
 lithium battery and the
 battery

INVENTOR(S): Kim, Jin Hee; Kim, Jin Sung; Hwang, Sang Moon;
 Baek, Ho Sung; Kim, Hak Soo

PATENT ASSIGNEE(S): Samsung SDI Co., Ltd., S. Korea

SOURCE: Jpn. Kokai Tokkyo Koho, 19 pp.

CODEN: JKXXAF

DOCUMENT TYPE: Patent

LANGUAGE: Japanese

FAMILY ACC. NUM. COUNT: 1

PATENT INFORMATION:

PATENT NO.	KIND	DATE	APPLICATION NO.	DATE
-----	----	-----	-----	
JP 2004311442	A	20041104	JP 2004-111392	200404 05
KR 2004086920	A	20041013	KR 2003-21110	200304 03
US 2004259002	A1	20041223	US 2004-817761	200404 02
CN 1540794	A	20041027	CN 2004-10038747	200404 05
PRIORITY APPLN. INFO.:			KR 2003-21110	A 200304 03

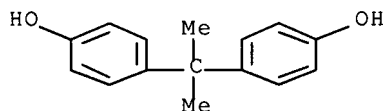
AB The electrolyte solution contains a Li salt, a nonaq. organic solvent, and an additive having a decomposition starting voltage 4-5 V and a constant current in a ≥ 0.5 V wide range on its linear sweep voltammogram. The additive is selected from bisphenol A, 2,5-dimethylfuran, 2,3-dichloro-1,4-naphthoquinone. The battery has suppressed gas formation when stored at high temps., and has improved safety when overcharged.

IT 80-05-7, Bisphenol A, uses

RL: MOA (Modifier or additive use); USES (Uses)
 (additives in electrolyte solns. in secondary
 lithium batteries for safety and high temperature
 storing performance)

RN 80-05-7 HCAPLUS

CN Phenol, 4,4'-(1-methylethylidene)bis- (CA INDEX NAME)



IC ICM H01M010-40
ICS H01M004-02; H01M004-58
CC 52-2 (Electrochemical, Radiational, and Thermal Energy Technology)
ST secondary **lithium battery** electrolyte additive
safety
IT Battery electrolytes
Safety
(electrolyte solns. containing additives in secondary **lithium batteries** for safety and high temperature storing performance)
IT Secondary **batteries**
(**lithium**; electrolyte solns. containing additives in secondary **lithium batteries** for safety and high temperature storing performance)
IT 80-05-7, Bisphenol A, uses 117-80-6, 2,3-Dichloro-1,4-naphthoquinone 625-86-5, 2,5-Dimethylfuran
RL: MOA (Modifier or additive use); USES (Uses)
(additives in **electrolyte** solns. in secondary **lithium batteries** for safety and high temperature storing performance)
IT 96-49-1, Ethylene carbonate 623-53-0, Ethyl methyl carbonate 21324-40-3, Lithium hexafluorophosphate
RL: DEV (Device component use); USES (Uses)
(electrolyte solns. containing additives in secondary **lithium batteries** for safety and high temperature storing performance)

L40 ANSWER 6 OF 10 HCAPLUS COPYRIGHT 2007 ACS on STN
ACCESSION NUMBER: 2004:796490 HCAPLUS Full-text
DOCUMENT NUMBER: 141:263480
TITLE: A **nonaqueous electrolyte** for a **lithium secondary battery**
INVENTOR(S): Noh, Hyeong-Gon; Jung, Cheol-Soo; Song, Eui-Hwan
PATENT ASSIGNEE(S): Samsung SDI Co., Ltd., S. Korea
SOURCE: Eur. Pat. Appl., 25 pp.
CODEN: EPXXDW
DOCUMENT TYPE: Patent
LANGUAGE: English
FAMILY ACC. NUM. COUNT: 1
PATENT INFORMATION:

PATENT NO.	KIND	DATE	APPLICATION NO.	DATE
EP 1463143	A2	20040929	EP 2003-90265	20030821
R: AT, BE, CH, DE, DK, ES, FR, GB, GR, IT, LI, LU, NL, SE, MC, PT, IE, SI, LT, LV, FI, RO, MK, CY, AL, TR, BG, CZ, EE, HU, SK				
KR 2004083670	A	20041006	KR 2003-18226	200303

JP 2005108440	A	20050421	JP 2003-183257	24
				200306
				26
CN 1532986	A	20040929	CN 2003-155677	200309
				02
US 2004197667	A1	20041007	US 2003-653192	200309
				03
US 7223500	B2	20070529		
PRIORITY APPLN. INFO.:			KR 2003-18226	A
				200303
				24

OTHER SOURCE(S): MARPAT 141:263480

AB An electrolyte of a **lithium** secondary **battery** includes **lithium** salts, an organic solvent with a high b.p., and a carbonate-based additive compound having substituents selected from the group consisting of a halogen, a CN, and a NO₂. , The electrolyte improves discharge, low temperature, and cycle life characteristics of a **lithium** secondary **battery**.

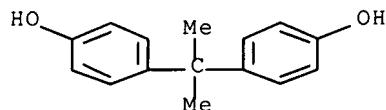
IT 80-05-7, uses

RL: MOA (Modifier or additive use); USES (Uses)

(**nonaq. electrolyte** for **lithium**
secondary **battery**)

RN 80-05-7 HCAPLUS

CN Phenol, 4,4'-(1-methylethylidene)bis- (CA INDEX NAME)



IC ICM H01M010-40

CC 52-2 (Electrochemical, Radiational, and Thermal Energy Technology)

ST **nonaq electrolyte lithium** secondary
battery

IT Secondary **batteries**
(**lithium; nonaq. electrolyte** for
lithium secondary **battery**)

IT Battery **electrolytes**
(**nonaq. electrolyte** for **lithium**
secondary **battery**)

IT Anhydrides
Aromatic hydrocarbons, uses
RL: DEV (Device component use); USES (Uses)
(**nonaq. electrolyte** for **lithium**
secondary **battery**)

IT Fluoropolymers, uses
RL: MOA (Modifier or additive use); USES (Uses)
(**nonaq. electrolyte** for **lithium**
secondary **battery**)

IT Styrene-butadiene rubber, uses
RL: MOA (Modifier or additive use); USES (Uses)
(**nonaq. electrolyte** for **lithium**
secondary **battery**)

IT 67-68-5, DmsO, uses 68-12-2, Dmf, uses 71-43-2, Benzene, uses

75-05-8, Acetonitrile, uses 79-16-3, N-Methylacetamide 96-48-0, γ -Butyrolactone 96-49-1, Ethylene carbonate 105-58-8, Diethyl carbonate 108-32-7, Propylene carbonate 108-88-3, Toluene, uses 123-39-7, n-Methylformamide 126-33-0, Sulfolane 462-06-6, Fluorobenzene 616-38-6, Dimethyl carbonate 616-42-2, Dimethyl sulfite 623-53-0, Methyl ethyl carbonate 623-96-1, Dipropyl carbonate 872-50-4, N-Methylpyrrolidone, uses 1330-20-7, Xylene, uses 4437-85-8, Butylene carbonate 7447-41-8, Lithium chloride, uses 7782-42-5, Graphite, uses 7791-03-9, Lithium perchlorate 10377-51-2, Lithium iodide 12003-67-7 14024-11-4, Lithium tetrachloroaluminate 14283-07-9, Lithium tetrafluoroborate 18424-17-4, Lithium hexafluoroantimonate 21324-40-3, Lithium hexafluorophosphate 25496-08-6, Fluorotoluene 27359-10-0, TriFluorotoluene 29935-35-1, Lithium hexafluoroarsenate 33454-82-9, Lithium triflate 35363-40-7, Ethyl propyl carbonate, uses 56525-42-9, Methyl propyl carbonate, uses 90076-65-6 131651-65-5 162684-16-4, Lithium manganese nickel oxide

RL: DEV (Device component use); USES (Uses)

(**nonaq. electrolyte** for lithium secondary battery)

IT 67-71-0, Methyl sulfone 77-77-0, Vinyl sulfone 80-05-7, uses 104-92-7, 4-Bromoanisole 127-63-9, Phenyl sulfone 452-10-8, 2,4-Difluoroanisole 456-49-5, 3-Fluoroanisole 459-60-9, 4-Fluoroanisole 463-79-6D, Carbonic acid, cyclic ester 620-32-6, Benzyl sulfone 623-12-1, 4-Chloroanisole 1073-05-8, 1,3-Propanediol cyclic sulfate 1120-71-4, Propane sultone 1888-91-1, n-Acetylcaprolactam 1889-59-4, Ethyl vinyl sulfone 2398-37-0, 3-Bromoanisole 2845-89-8, 3-Chloroanisole 3680-02-2, Methyl vinyl sulfone 5535-48-8, Phenyl vinyl sulfone 24937-79-9, PvdF 28452-93-9, Butadiene sulfone 28802-49-5, Dimethylfuran 93343-10-3, 3,5-Difluoroanisole 114435-02-8, Fluoroethylene carbonate 202925-08-4, 3-Chloro-5-fluoroanisole 756901-22-1 756901-23-2

RL: MOA (Modifier or additive use); USES (Uses)

(**nonaq. electrolyte** for lithium secondary battery)

IT 9003-55-8

RL: MOA (Modifier or additive use); USES (Uses)

(styrene-butadiene rubber; **nonaq. electrolyte** for lithium secondary battery)

L40 ANSWER 7 OF 10 HCAPLUS COPYRIGHT 2007 ACS on STN

ACCESSION NUMBER: 2004:753254 HCAPLUS Full-text

DOCUMENT NUMBER: 141:228183

TITLE: A **nonaqueous electrolyte** for lithium secondary battery

INVENTOR(S): Kim, Jin-Hee; Kim, Jin-Sung; Hwang, Sang-Moon; Paik, Meen-Seon; Kim, Hak-Soo

PATENT ASSIGNEE(S): Samsung SDI Co., Ltd., S. Korea; Cheil Industries Inc.

SOURCE: Eur. Pat. Appl., 33 pp.
CODEN: EPXXDW

DOCUMENT TYPE: Patent

LANGUAGE: English

FAMILY ACC. NUM. COUNT: 1

PATENT INFORMATION:

PATENT NO.	KIND	DATE	APPLICATION NO.	DATE
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EP 1458048	A1	20040915	EP 2003-90262	200308 21
R: AT, BE, CH, DE, DK, ES, FR, GB, GR, IT, LI, LU, NL, SE, MC, PT, IE, SI, LT, LV, FI, RO, MK, CY, AL, TR, BG, CZ, EE, HU, SK				
KR 2004080775	A	20040920	KR 2003-15749	200303 13
JP 2005108439	A	20050421	JP 2003-183239	200306 26
CN 1531134	A	20040922	CN 2003-155332	200308 27
US 2004185347	A1	20040923	US 2003-658272	200309 10
PRIORITY APPLN. INFO.:			KR 2003-15749	A 200303 13

OTHER SOURCE(S): MARPAT 141:228183

AB An electrolyte for a **lithium** secondary **battery** includes **lithium** salts, a nonaq. organic solvent, and additive compds. The additive compds. added to the electrolyte of the present invention decompose earlier than the organic solvent to form a conductive polymer layer on the surface of a pos. electrode, and prevent decomposition of the organic solvent. Accordingly, the electrolyte inhibits gas generation caused by decomposition of the organic solvent at initial charging, and thus reduces an increase of internal pressure and swelling during high temperature storage, and also improves safety of the battery during overcharge.

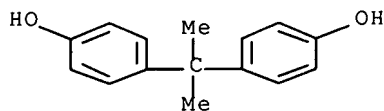
IT 80-05-7, Bisphenol A, uses

RL: MOA (Modifier or additive use); USES (Uses)

(**nonaq. electrolyte** for **lithium**
secondary **battery**)

RN 80-05-7 HCAPLUS

CN Phenol, 4,4'-(1-methylethylidene)bis- (CA INDEX NAME)



IC ICM H01M010-40

CC 52-2 (Electrochemical, Radiational, and Thermal Energy Technology)

ST **nonaq electrolyte lithium** secondary
battery; safety **nonaq electrolyte**
lithium secondary **battery**

IT Secondary **batteries**
(**lithium**; **nonaq. electrolyte** for
lithium secondary **battery**)

IT Battery **electrolytes**
Conducting polymers
Safety
Swelling, physical
(**nonaq. electrolyte** for **lithium**)

secondary **battery**)

IT Aromatic hydrocarbons, uses
Esters, uses
Ethers, uses
Ketones, uses
RL: DEV (Device component use); USES (Uses)
(**nonaq. electrolyte** for lithium
secondary **battery**)

IT Lithium alloy, base
RL: DEV (Device component use); USES (Uses)
(**nonaq. electrolyte** for lithium
secondary **battery**)

IT 67-71-0, Methylsulfone 71-43-2, Benzene, uses 77-77-0,
Vinylsulfone 96-49-1, Ethylene carbonate 105-58-8, Diethyl
carbonate 108-32-7, Propylene carbonate 108-88-3, Toluene, uses
126-33-0, Tetramethylene sulfone 127-63-9, Phenylsulfone
462-06-6, Fluorobenzene 463-79-6D, Carbonic acid, chain ester
463-79-6D, Carbonic acid, cyclic ester 463-79-6D, Carbonic acid,
ester 616-38-6, Dimethyl carbonate 620-32-6, Benzylsulfone
623-53-0, Methyl ethyl carbonate 623-96-1, Dipropyl carbonate
1330-20-7, Xylene, uses 1889-59-4, Ethylvinylsulfone 3680-02-2,
Methylvinylsulfone 4437-85-8, Butylene carbonate 5535-43-3,
m-ChloroPhenyl vinyl sulfone 5535-48-8, Phenylvinylsulfone
7439-93-2, Lithium, uses 7447-41-8, Lithium chloride (LiCl), uses
7791-03-9, Lithium perchlorate 10377-51-2, Lithium iodide
14024-11-4, Aluminum lithium chloride $AlLiCl_4$ 14283-07-9, Lithium
tetrafluoroborate 18424-17-4, Lithium hexafluoroantimonate
21324-40-3, Lithium hexafluorophosphate 27359-10-0,
Trifluorotoluene 28122-14-7, p-FluoroPhenyl vinyl sulfone
28452-93-9, Butadiene sulfone 29935-35-1, Lithium
hexafluoroarsenate 33454-82-9, Lithium triflate 35363-40-7,
Ethyl propyl carbonate, uses 37220-89-6, Aluminum lithium oxide
39300-70-4, Lithium nickel oxide 56525-42-9, Methyl propyl
carbonate, uses 90076-65-6 131651-65-5, Lithium
nonafluorobutanesulfonate 162684-16-4, Lithium manganese nickel
oxide
RL: DEV (Device component use); USES (Uses)
(**nonaq. electrolyte** for lithium
secondary **battery**)

IT 80-05-7, Bisphenol A, uses 95-15-8, Thianaphthene
117-80-6, 2,3-Dichloro-1,4-naphthoquinone 271-89-6, 2,3-Benzofuran
524-42-5, 1,2-Naphthoquinone 625-86-5, 2,5-Dimethylfuran
693-98-1, 2-Methylimidazole 1192-62-7, 2-Acetylfuran 1193-79-9,
2-Acetyl-5-methylfuran 4265-27-4, 2-Butylbenzofuran 7474-83-1,
3-Bromo-1,2-naphthoquinone 13243-65-7, 2,3-Dibromo-1,4-
naphthoquinone 16851-82-4, 1-(Phenylsulfonyl)pyrrole
RL: MOA (Modifier or additive use); USES (Uses)
(**nonaq. electrolyte** for lithium
secondary **battery**)

REFERENCE COUNT: 10 THERE ARE 10 CITED REFERENCES AVAILABLE
FOR THIS RECORD. ALL CITATIONS AVAILABLE
IN THE RE FORMAT

L40 ANSWER 8 OF 10 HCAPLUS COPYRIGHT 2007 ACS on STN
ACCESSION NUMBER: 2001:847742 HCAPLUS Full-text
DOCUMENT NUMBER: 136:9010
TITLE: Solid polymer electrolyte
INVENTOR(S): Ogawa, Noriyoshi; Kanekawa, Tatsuya
PATENT ASSIGNEE(S): Mitsubishi Gas Chemical Co., Ltd., Japan
SOURCE: Jpn. Kokai Tokkyo Koho, 11 pp.

DOCUMENT TYPE: Patent
 LANGUAGE: Japanese
 FAMILY ACC. NUM. COUNT: 1
 PATENT INFORMATION:

PATENT NO.	KIND	DATE	APPLICATION NO.	DATE
JP 2001325990	A	20011122	JP 2000-141683	20000515
PRIORITY APPLN. INFO.:			JP 2000-141683	20000515

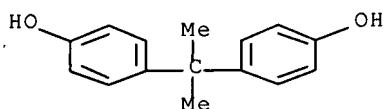
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* STRUCTURE DIAGRAM TOO LARGE FOR DISPLAY - AVAILABLE VIA OFFLINE PRINT *

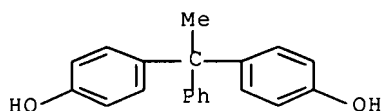
AB The electrolyte contains an ionizable Group I or Group II metal salt and a copolymer, having limiting viscosity 0.2-2.0 dL/g, and containing repeating units I (R1-4 = H, C1-10 alkyl, C6-12 aryl, C2-5 alkenyl, C1-5 alkoxy, or C7-17 aralkyl groups and may have C1-5 alkyl, C2-5 alkenyl, or C1-5 alkoxy substituents; X = - (CR5R6)n-, -S-, -SO2-, -O-, -CO-, -SO-, II, or III; R5-6 = H, C1-10 alkyl, C6-12 aryl, C2-5 alkenyl, or C1-5 alkoxy groups that may contain C1-5 alkyl, C2-5 alkenyl or C1-5 alkoxy substituents, or R5 and R6 joined to form a (heterocyclic) ring; R7-8 = H, C1-10 alkyl, C2-10 alkenyl, C1-10 alkoxy, or C6-12 aryl group; a = 0-20 integer) and 20-70 mol% IV (R9-10 = H, C1-5 alkyl, C6-12 aryl, C2-5 alkenyl, C1-5 alkoxy, C7-17 aralkyl groups and may have C1-5 alkyl, C2-5 alkenyl, or C1-5 alkoxy substituents; R11-14 = H, C1-5 alkyl, C6-12 aryl, C2-5 alkenyl, C1-5 alkoxy, C7-17 aralkyl groups and may have C1-5 alkyl, C2-5 alkenyl, or C1-5 alkoxy substituents; R15 = C1-6 alkylene group, alkylidene group, or single bond; Y = polymer or random copolymer of -SiR16R17O- and/or -SiR18R19O- having d.p. 0-200, R16-19 = H, C1-5 alkyl, C6-12 aryl, C2-5 alkenyl, C1-5 alkoxy, C7-17 aralkyl groups and may have C1-5 alkyl, C2-5 alkenyl, or C1-5 alkoxy substituents). The electrolyte is useful for batteries.

IT 80-05-7, 2,2-Bis(4-hydroxyphenyl)propane, processes
 1571-75-1, 1,1-Bis(4-hydroxyphenyl)-1-phenyl ethane
 27955-94-8, 1,1,1-Tris(4-hydroxyphenyl)ethane
 RL: PEP (Physical, engineering or chemical process); PROC (Process)
 (in manufacture of solid polymer **electrolyte** containing
 carbonate ester-siloxane copolymer for secondary **lithium**
batteries)

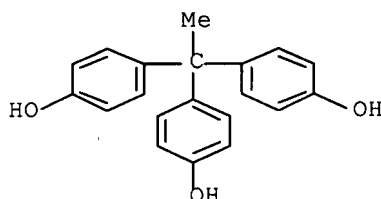
RN 80-05-7 HCAPLUS
 CN Phenol, 4,4'-(1-methylethylidene)bis- (CA INDEX NAME)



RN 1571-75-1 HCAPLUS
 CN Phenol, 4,4'-(1-phenylethylidene)bis- (CA INDEX NAME)



RN 27955-94-8 HCAPLUS
 CN Phenol, 4,4',4''-ethylidynetris- (CA INDEX NAME)



IC ICM H01M010-40
 ICS C08G064-04; C08K003-00; C08L069-00; H01B001-06
 CC 52-2 (Electrochemical, Radiational, and Thermal Energy Technology)
 IT Battery electrolytes
 (comps. of solid polymer electrolyte containing carbonate
 ester-siloxane copolymer for secondary **lithium**
batteries)
 IT 96-49-1, Ethylene carbonate 108-32-7, Propylene carbonate
 7791-03-9, Lithium perchlorate 158626-68-7 163111-96-4
 375369-96-3 375369-98-5
 RL: DEV (Device component use); USES (Uses)
 (comps. of solid polymer electrolyte containing carbonate
 ester-siloxane copolymer for secondary **lithium**
batteries)
 IT 75-44-5, Phosgen 79-97-0, 2,2-Bis(4-hydroxy-3-methylphenyl)propane
80-05-7, 2,2-Bis(4-hydroxyphenyl)propane, processes
 843-55-0, 1,1-Bis(4-hydroxyphenyl)cyclohexane **1571-75-1**,
 1,1-Bis(4-hydroxyphenyl)-1-phenyl ethane 7775-14-6, Sodium
 hydrosulfite **27955-94-8**, 1,1,1-Tris(4-hydroxyphenyl)ethane
 88938-12-9, 9,9-Bis(4-hydroxy-3-methylphenyl)fluorene 158167-48-7
 RL: PEP (Physical, engineering or chemical process); PROC (Process)
 (in manufacture of solid polymer **electrolyte** containing
 carbonate ester-siloxane copolymer for secondary **lithium**
batteries)

L40 ANSWER 9 OF 10 HCAPLUS COPYRIGHT 2007 ACS on STN
 ACCESSION NUMBER: 1999:387866 HCAPLUS Full-text
 DOCUMENT NUMBER: 131:21332
 TITLE: Manufacture of **lithium**
batteries
 INVENTOR(S): Kodama, Mitsuhiro; Aihara, Yuichi; Okise,
 Hideto; Arai, Morikatsu
 PATENT ASSIGNEE(S): Yuasa Battery Co., Ltd., Japan
 SOURCE: Jpn. Kokai Tokkyo Koho, 5 pp.
 CODEN: JKXXAF
 DOCUMENT TYPE: Patent

LANGUAGE: Japanese
 FAMILY ACC. NUM. COUNT: 1
 PATENT INFORMATION:

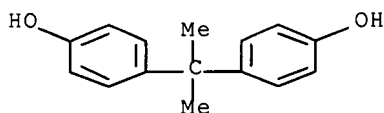
PATENT NO.	KIND	DATE	APPLICATION NO.	DATE
JP 11162506	A	19990618	JP 1997-328605	19971128
PRIORITY APPLN. INFO.:			JP 1997-328605	19971128

AB The batteries are prepared by filling cathode and anode active mass, mixed with a monomer and an electrolyte, in resp. collectors, vibrating or rolling the collector, and polymerizing the monomer.

IT **80-05-7D**, Bisphenol A, ethylene oxide adducts, acrylates
 RL: DEV (Device component use); PEP (Physical, engineering or chemical process); PROC (Process); USES (Uses)
 (in manufacture of electrodes containing polymer **electrolytes** for **lithium batteries**)

RN 80-05-7 HCAPLUS

CN Phenol, 4,4'-(1-methylethylidene)bis- (CA INDEX NAME)



IC ICM H01M010-38
 ICS H01M004-02; H01M004-04; H01M004-58; H01M010-40

CC 52-2 (Electrochemical, Radiational, and Thermal Energy Technology)

ST **lithium battery** polymer electrolyte electrode
 manuf

IT Battery electrodes
 (manufacture of electrodes containing polymer electrolytes for **lithium batteries**)

IT Fluoropolymers, uses
 RL: DEV (Device component use); PEP (Physical, engineering or chemical process); PROC (Process); USES (Uses)
 (manufacture of electrodes containing polymer electrolytes for **lithium batteries**)

IT **80-05-7D**, Bisphenol A, ethylene oxide adducts, acrylates
 116-14-3, Tetrafluoroethylene, uses
 RL: DEV (Device component use); PEP (Physical, engineering or chemical process); PROC (Process); USES (Uses)
 (in manufacture of electrodes containing polymer **electrolytes** for **lithium batteries**)

IT 96-48-0, γ -Butyrolactone 7440-44-0, Carbon, uses
 9002-84-0, Polytetrafluoroethylene 12190-79-3, Cobalt lithium oxide (CoLiO₂) 14283-07-9, Lithium fluoroborate
 RL: DEV (Device component use); PEP (Physical, engineering or chemical process); PROC (Process); USES (Uses)
 (manufacture of electrodes containing polymer electrolytes for **lithium batteries**)

L40 ANSWER 10 OF 10 HCAPLUS COPYRIGHT 2007 ACS on STN

ACCESSION NUMBER: 1998:421186 HCAPLUS Full-text

DOCUMENT NUMBER: 129:56517

TITLE: **Nonaqueous electrolyte**
batteries and secondary polymer electrolyte
batteries

INVENTOR(S): Arai, Kayo; Katsumata, Toshio

PATENT ASSIGNEE(S): Toshiba Battery Co., Ltd., Japan

SOURCE: Jpn. Kokai Tokkyo Koho, 8 pp.

CODEN: JKXXAF

DOCUMENT TYPE: Patent

LANGUAGE: Japanese

FAMILY ACC. NUM. COUNT: 1

PATENT INFORMATION:

PATENT NO. -----	KIND ----	DATE -----	APPLICATION NO. -----	DATE
JP 10172615	A	19980626	JP 1996-336854	199612 17

PRIORITY APPLN. INFO.:

JP 1996-336854

199612
17

AB **Nonaq. electrolyte** batteries use cathodes, anodes, and/or separators containing a fire retardant which generates a volatile noncombustible substance at high temperature Secondary polymer electrolyte **Li batteries** use cathodes, anodes, and/or electrolyte retaining polymers containing a fire retardant which generates a volatile noncombustible substance at high temperature The fire retardant is preferably tetrabromo bisphenol A or mixts. of tetrabromo bisphenol A and Sb oxide.

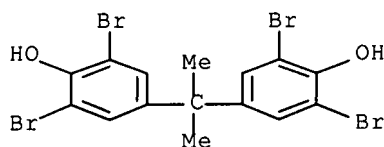
IT **79-94-7, Tetrabromo bisphenol A**

RL: DEV (Device component use); PEP (Physical, engineering or chemical process); PROC (Process); USES (Uses)

(tetrabromo bisphenol A and antimony oxide fire retardants for electrodes and separators and polymer **electrolytes** in secondary **lithium batteries**)

RN 79-94-7 HCAPLUS

CN Phenol, 4,4'-(1-methylethylidene)bis[2,6-dibromo- (CA INDEX NAME)



IC ICM H01M010-40

ICS H01M010-40; H01M002-16; H01M004-02; H01M004-62

CC 52-2 (Electrochemical, Radiational, and Thermal Energy Technology)

ST **lithium battery** fire retardant bromobisphenol A;

antimony oxide fire retardant **lithium battery**

IT Secondary **batteries**

(**lithium**; tetrabromo bisphenol A and antimony oxide fire retardants for electrodes and separators and polymer electrolytes in secondary **lithium batteries**)

IT Fireproofing agents
 (tetrabromo bisphenol A and antimony oxide fire retardants for electrodes and separators and polymer electrolytes in secondary lithium batteries)

IT Petroleum coke
 RL: DEV (Device component use); PEP (Physical, engineering or chemical process); PROC (Process); USES (Uses)
 (tetrabromo bisphenol A and antimony oxide fire retardants for electrodes and separators and polymer electrolytes in secondary lithium batteries)

IT 79-94-7, Tetrabromo bisphenol A 96-49-1, Ethylene carbonate 616-38-6, Dimethyl carbonate 1309-64-4, Antimony oxide (Sb₂O₃), uses 9011-17-0, Vinylidene fluoride-hexafluoropropylene copolymer 12057-17-9, Lithium manganese oxide (LiMn₂O₄) 21324-40-3, Lithium hexafluorophosphate
 RL: DEV (Device component use); PEP (Physical, engineering or chemical process); PROC (Process); USES (Uses)
 (tetrabromo bisphenol A and antimony oxide fire retardants for electrodes and separators and polymer electrolytes in secondary lithium batteries)

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L41 ANSWER 1 OF 18 HCAPLUS COPYRIGHT 2007 ACS on STN
 ACCESSION NUMBER: 2006:745637 HCAPLUS Full-text
 DOCUMENT NUMBER: 145:296106
 TITLE: **Nonaqueous electrolyte**
 solution and secondary battery containing the solution

INVENTOR(S): Kim, Hak Su; Kim, Jong Seop; Park, Myeong Guk; Yang, Ho Seok

PATENT ASSIGNEE(S): Cheil Industries Inc., S. Korea

SOURCE: Repub. Korean Kongkae Taeho Kongbo, No pp. given
 CODEN: KRXXA7

DOCUMENT TYPE: Patent

LANGUAGE: Korean

FAMILY ACC. NUM. COUNT: 1

PATENT INFORMATION:

PATENT NO.	KIND	DATE	APPLICATION NO.	DATE
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KR 2004061572	A	20040707	KR 2002-87845	20021231

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PRIORITY APPLN. INFO.: KR 2002-87845

20021231

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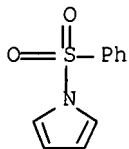
AB A **nonaq. electrolyte** solution and a secondary battery containing the electrolyte solution are provided to reduce the generation of gas at a high temperature (85°) remarkably, thereby preventing the swelling due to the generation of gas of a battery and improving the capacity storage at a high temperature The electrolyte solution has a Li salt dissolved in a carbonate-based organic solvent mixture; and 0.1-10 weight parts of a 1-phenylsulfonyl pyrrole derivative or 1-phenylsulfonyl thiophene derivative

IT 16851-82-4D, 1-Phenylsulfonyl pyrrole, derivs.
 RL: MOA (Modifier or additive use); USES (Uses)

(**electrolyte** solns. containing phenylsulfonyl pyrrole
 derivs. or phenylsulfonyl thiophene derivs. for secondary
 batteries)

RN 16851-82-4 HCAPLUS

CN 1H-Pyrrole, 1-(phenylsulfonyl)- (CA INDEX NAME)



IC ICM H01M010-40

CC 52-2 (Electrochemical, Radiational, and Thermal Energy Technology)

IT **16851-82-4D**, 1-Phenylsulfonyl pyrrole, derivs.

22407-40-5D, derivs.

RL: MOA (Modifier or additive use); USES (Uses)

(**electrolyte** solns. containing phenylsulfonyl pyrrole
 derivs. or phenylsulfonyl thiophene derivs. for secondary
 batteries)

L41 ANSWER 2 OF 18 HCAPLUS COPYRIGHT 2007 ACS on STN

ACCESSION NUMBER: 2004:753254 HCAPLUS Full-text

DOCUMENT NUMBER: 141:228183

TITLE: A **nonaqueous electrolyte** for
 lithium secondary battery

INVENTOR(S): Kim, Jin-Hee; Kim, Jin-Sung; Hwang, Sang-Moon;
 Paik, Meen-Seon; Kim, Hak-Soo

PATENT ASSIGNEE(S): Samsung SDI Co., Ltd., S. Korea; Cheil
 Industries Inc.

SOURCE: Eur. Pat. Appl., 33 pp.

CODEN: EPXXDW

DOCUMENT TYPE: Patent

LANGUAGE: English

FAMILY ACC. NUM. COUNT: 1

PATENT INFORMATION:

PATENT NO.	KIND	DATE	APPLICATION NO.	DATE
EP 1458048	A1	20040915	EP 2003-90262	200308 21
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R: AT, BE, CH, DE, DK, ES, FR, GB, GR, IT, LI, LU, NL, SE, MC, PT, IE, SI, LT, LV, FI, RO, MK, CY, AL, TR, BG, CZ, EE, HU, SK				
KR 2004080775	A	20040920	KR 2003-15749	200303 13
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JP 2005108439	A	20050421	JP 2003-183239	200306 26
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CN 1531134	A	20040922	CN 2003-155332	200308

27

US 2004185347

A1

20040923

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US 2003-658272

200309

10

PRIORITY APPLN. INFO.:

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KR 2003-15749

A

200303

13

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OTHER SOURCE(S): MARPAT 141:228183

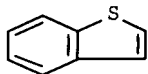
AB An electrolyte for a lithium secondary battery includes lithium salts, a nonaq. organic solvent, and additive compds. The additive compds. added to the electrolyte of the present invention decompose earlier than the organic solvent to form a conductive polymer layer on the surface of a pos. electrode, and prevent decomposition of the organic solvent. Accordingly, the electrolyte inhibits gas generation caused by decomposition of the organic solvent at initial charging, and thus reduces an increase of internal pressure and swelling during high temperature storage, and also improves safety of the battery during overcharge.

IT 95-15-8, Thianaphthene 271-89-6, 2,3-Benzofuran
4265-27-4, 2-Butylbenzofuran 16851-82-4,
1-(Phenylsulfonyl)pyrrole

RL: MOA (Modifier or additive use); USES (Uses)
(nonaq. electrolyte for lithium secondary
battery)

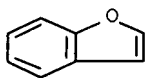
RN 95-15-8 HCAPLUS

CN Benzo[b]thiophene (CA INDEX NAME)



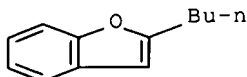
RN 271-89-6 HCAPLUS

CN Benzofuran (CA INDEX NAME)



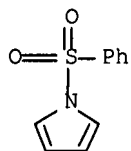
RN 4265-27-4 HCAPLUS

CN Benzofuran, 2-butyl- (CA INDEX NAME)



RN 16851-82-4 HCAPLUS

CN 1H-Pyrrole, 1-(phenylsulfonyl)- (CA INDEX NAME)



IC ICM H01M010-40
 CC 52-2 (Electrochemical, Radiational, and Thermal Energy Technology)
 ST **nonaq electrolyte** lithium secondary battery;
 safety **nonaq electrolyte** lithium secondary
 battery
 IT Secondary batteries
 (lithium; **nonaq. electrolyte** for lithium
 secondary battery)
 IT Battery **electrolytes**
 Conducting polymers
 Safety
 Swelling, physical
 (**nonaq. electrolyte** for lithium secondary
 battery)
 IT Aromatic hydrocarbons, uses
 Esters, uses
 Ethers, uses
 Ketones, uses
 RL: DEV (Device component use); USES (Uses)
 (**nonaq. electrolyte** for lithium secondary
 battery)
 IT Lithium alloy, base
 RL: DEV (Device component use); USES (Uses)
 (**nonaq. electrolyte** for lithium secondary
 battery)
 IT 67-71-0, Methylsulfone 71-43-2, Benzene, uses 77-77-0,
 Vinylsulfone 96-49-1, Ethylene carbonate 105-58-8, Diethyl
 carbonate 108-32-7, Propylene carbonate 108-88-3, Toluene, uses
 126-33-0, Tetramethylene sulfone 127-63-9, Phenylsulfone
 462-06-6, Fluorobenzene 463-79-6D, Carbonic acid, chain ester
 463-79-6D, Carbonic acid, cyclic ester 463-79-6D, Carbonic acid,
 ester 616-38-6, Dimethyl carbonate 620-32-6, Benzylsulfone
 623-53-0, Methyl ethyl carbonate 623-96-1, Dipropyl carbonate
 1330-20-7, Xylene, uses 1889-59-4, Ethylvinylsulfone 3680-02-2,
 Methylvinylsulfone 4437-85-8, Butylene carbonate 5535-43-3,
 m-ChloroPhenyl vinyl sulfone 5535-48-8, Phenylvinylsulfone
 7439-93-2, Lithium, uses 7447-41-8, Lithium chloride (LiCl), uses
 7791-03-9, Lithium perchlorate 10377-51-2, Lithium iodide
 14024-11-4, Aluminum lithium chloride AlLiCl4 14283-07-9, Lithium
 tetrafluoroborate 18424-17-4, Lithium hexafluoroantimonate
 21324-40-3, Lithium hexafluorophosphate 27359-10-0,
 Trifluorotoluene 28122-14-7, p-FluoroPhenyl vinyl sulfone
 28452-93-9, Butadiene sulfone 29935-35-1, Lithium
 hexafluoroarsenate 33454-82-9, Lithium triflate 35363-40-7,
 Ethyl propyl carbonate, uses 37220-89-6, Aluminum lithium oxide
 39300-70-4, Lithium nickel oxide 56525-42-9, Methyl propyl
 carbonate, uses 90076-65-6 131651-65-5, Lithium
 nonafluorobutanesulfonate 162684-16-4, Lithium manganese nickel
 oxide
 RL: DEV (Device component use); USES (Uses)
 (**nonaq. electrolyte** for lithium secondary
 battery)

IT 80-05-7, Bisphenol A, uses 95-15-8, Thianaphthene
 117-80-6, 2,3-Dichloro-1,4-naphthoquinone 271-89-6,
 2,3-Benzofuran 524-42-5, 1,2-Naphthoquinone 625-86-5,
 2,5-Dimethylfuran 693-98-1, 2-Methylimidazole 1192-62-7,
 2-Acetylfuran 1193-79-9, 2-Acetyl-5-methylfuran 4265-27-4
 , 2-Butylbenzofuran 7474-83-1, 3-Bromo-1,2-naphthoquinone
 13243-65-7, 2,3-Dibromo-1,4-naphthoquinone 16851-82-4,
 1-(Phenylsulfonyl)pyrrole

RL: MOA (Modifier or additive use); USES (Uses)

(**nonaq. electrolyte** for lithium secondary
 battery)

REFERENCE COUNT: 10 THERE ARE 10 CITED REFERENCES AVAILABLE
 FOR THIS RECORD. ALL CITATIONS AVAILABLE
 IN THE RE FORMAT

L41 ANSWER 3 OF 18 HCAPLUS COPYRIGHT 2007 ACS on STN
 ACCESSION NUMBER: 2003:300775 HCAPLUS Full-text
 DOCUMENT NUMBER: 138:290461
 TITLE: Secondary lithium batteries using lithium nickel
 manganese oxide cathodes
 INVENTOR(S): Okada, Mikio
 PATENT ASSIGNEE(S): Japan Storage Battery Co., Ltd., Japan
 SOURCE: Jpn. Kokai Tokkyo Koho, 10 pp.
 CODEN: JKXXAF
 DOCUMENT TYPE: Patent
 LANGUAGE: Japanese
 FAMILY ACC. NUM. COUNT: 1
 PATENT INFORMATION:

PATENT NO.	KIND	DATE	APPLICATION NO.	DATE
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JP 2003115324	A	20030418	JP 2001-308766	200110 04

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PRIORITY APPLN. INFO.: JP 2001-308766
 200110
 04

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AB The batteries comprise $\text{Li}_x\text{Ni}_y\text{Mn}_{2-y}\text{O}_4$ ($x = 0-1$ $y = 0.45-0.6$) as cathodes,
 carbonaceous anodes, and **nonaq. electrolytes**; wherein nitrogen-containing unsatd.
 cyclic compds. are included in the electrolytes to improve charge-discharge
 cycling performance. A part of Ni or Mn in the compound oxides may have been
 substituted with Co, Fe, Zn, Al, or V.

IT 109-97-7, Pyrrole
 RL: MOA (Modifier or additive use); TEM (Technical or engineered
 material use); USES (Uses)
 (**electrolyte** additive; secondary lithium batteries
 using lithium nickel manganese oxide cathodes and containing
 nitrogen-containing unsatd. heterocyclic additives in
electrolytes)

RN 109-97-7 HCAPLUS

CN 1H-Pyrrole (CA INDEX NAME)



IC ICM H01M010-40
 ICS H01M004-02; H01M004-58; H01M004-62
 CC 52-2 (Electrochemical, Radiational, and Thermal Energy Technology)
 IT 108-47-4, 2,4-Dimethylpyridine 108-48-5, 2,6-Dimethylpyridine
 109-97-7, Pyrrole 110-86-1, Pyridine, uses 120-73-0,
 Purine 288-13-1, Pyrazole 289-80-5, Pyridazine 289-95-2,
 Pyrimidine 290-37-9, Pyrazine 372-47-4, 3-Fluoropyridine
 372-48-5, 2-Fluoropyridine 583-58-4, 3,4-Dimethylpyridine
 583-61-9, 2,3-Dimethylpyridine 589-93-5, 2,5-Dimethylpyridine
 591-22-0, 3,5-Dimethylpyridine 5453-67-8, Dimethyl-2,6-pyridine
 dicarboxylate 6269-24-5, Methyl-3-pyridyl carbamate 36118-45-3,
 Pyrazoline 39455-90-8, Pyrazolone 67242-59-5,
 N-Methyl-N-(2-pyridyl)formamide
 RL: MOA (Modifier or additive use); TEM (Technical or engineered
 material use); USES (Uses)
 (electrolyte additive; secondary lithium batteries
 using lithium nickel manganese oxide cathodes and containing
 nitrogen-containing unsatd. heterocyclic additives in
 electrolytes)

L41 ANSWER 4 OF 18 HCAPLUS COPYRIGHT 2007 ACS on STN

ACCESSION NUMBER: 2003:58416 HCAPLUS Full-text

DOCUMENT NUMBER: 138:124987

TITLE: **Nonaqueous electrolyte**
 solution and secondary battery using the
 solution

INVENTOR(S): Takehara, Masahiro; Fujii, Takashi; Kotato,
 Minoru; Noda, Daisuke; Kinoshita, Shinichi; Ue,
 Makoto; Suzuki, Hitoshi

PATENT ASSIGNEE(S): Mitsubishi Chemical Corporation, Japan

SOURCE: PCT Int. Appl., 61 pp.

CODEN: PIXXD2

DOCUMENT TYPE: Patent

LANGUAGE: Japanese

FAMILY ACC. NUM. COUNT: 1

PATENT INFORMATION:

PATENT NO.	KIND	DATE	APPLICATION NO.	DATE
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WO 2003007416	A1	20030123	WO 2002-JP6906	200207 08

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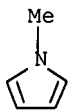
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 GE, GH, GM, HR, HU, ID, IL, IN, IS, KE, KG, KP, KR, KZ, LC,
 LK, LR, LS, LT, LU, LV, MA, MD, MG, MK, MN, MW, MX, MZ, NO,
 NZ, OM, PH, PL, PT, RO, RU, SD, SE, SG, SI, SK, SL, TJ, TM,
 TN, TR, TT, TZ, UA, UG, US, UZ, VN, YU, ZA, ZM, ZW
 RW: GH, GM, KE, LS, MW, MZ, SD, SL, SZ, TZ, UG, ZM, ZW, AT, BE,
 BG, CH, CY, CZ, DE, DK, EE, ES, FI, FR, GB, GR, IE, IT, LU,
 MC, NL, PT, SE, SK, TR, BF, BJ, CF, CG, CI, CM, GA, GN, GQ,
 GW, ML, MR, NE, SN, TD, TG

JP 2007134047 A 20070531 JP 2001-214638

200107
16

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AU 2002318629	A1	20030129	AU 2002-318629		200207 08
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EP 1317013	A1	20030604	EP 2002-745873		200207 08
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R: AT, BE, CH, DE, DK, ES, FR, GB, GR, IT, LI, LU, NL, MC, PT, IE, SI, LT, LV, FI, RO, MK, CY, AL, BG, CZ, EE					
JP 2003092137	A	20030328	JP 2002-200364		200207 09
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US 2003165733	A1	20030904	US 2003-383555		200303 10
			<--		
US 6942948	B2	20050913			
PRIORITY APPLN. INFO.:			JP 2001-208992	A	200107 10
			<--		
			JP 2001-214638	A	200107 16
			<--		
			WO 2002-JP6906	W	200207 08
			<--		
AB	The electrolyte solution has a Li salt dissolved in a lactone based nonaq. solvent mixture, where the solution contains ≤1 mmol hydroxy carboxylic acid/kg. The electrolyte solution may also contain a N heterocyclic compound The battery is a secondary Li battery.				
IT	96-54-8 , 1-Methylpyrrole				
	RL: DEV (Device component use); USES (Uses)				
	(nonaq. electrolyte solns. with low hydroxy carboxylic acid contents for secondary lithium batteries)				
RN	96-54-8 HCAPLUS				
CN	1H-Pyrrole, 1-methyl- (CA INDEX NAME)				



IC ICM H01M010-40
ICS H01M004-02; H01M004-58; H01M004-48
CC 52-2 (Electrochemical, Radiational, and Thermal Energy Technology)
IT Battery electrolytes
(nonaq. electrolyte solns. with low hydroxy carboxylic acid contents for secondary lithium batteries)
IT 80-73-9, 1,3-Dimethyl-2-imidazolidinone 88-12-0, uses 91-22-5, Quinoline, uses 96-48-0, γ-Butyrolactone 96-49-1, Ethylene carbonate **96-54-8**, 1-Methylpyrrole 109-06-8,

α -Picoline 110-86-1, Pyridine, uses 289-80-5, Pyridazine
289-96-3, 1,2,3-Triazine 623-53-0, Ethyl methyl carbonate
872-36-6, Vinylene carbonate 872-50-4, 1-Methylpyrrolidone, uses
3741-38-6, Ethylene sulfite 4427-92-3, Phenyl ethylene carbonate
14283-07-9, Lithium fluoroborate 19836-78-3 21324-40-3, Lithium
hexafluorophosphate 38222-83-2, 2,6-Di-tert-butyl-4-methylpyridine
RL: DEV (Device component use); USES (Uses)

(**nonaq. electrolyte** solns. with low hydroxy
carboxylic acid contents for secondary lithium batteries)

IT 591-81-1, γ -Hydroxybutyric acid 122525-99-9, Zonyl fso-100

RL: MSC (Miscellaneous)

(**nonaq. electrolyte** solns. with low hydroxy
carboxylic acid contents for secondary lithium batteries)

REFERENCE COUNT: 19 THERE ARE 19 CITED REFERENCES AVAILABLE
FOR THIS RECORD. ALL CITATIONS AVAILABLE
IN THE RE FORMAT

L41 ANSWER 5 OF 18 HCAPLUS COPYRIGHT 2007 ACS on STN

ACCESSION NUMBER: 2002:945140 HCAPLUS Full-text

DOCUMENT NUMBER: 138:26910

TITLE: Secondary **nonaqueous**
electrolyte battery and the
nonaqueous electrolyte
solution

INVENTOR(S): Takehara, Masahiro; Fujii, Takashi; Kinoshita,
Shinichi; Ue, Makoto

PATENT ASSIGNEE(S): Mitsubishi Chemical Corp., Japan

SOURCE: Jpn. Kokai Tokkyo Koho, 7 pp.

CODEN: JKXXAF

DOCUMENT TYPE: Patent

LANGUAGE: Japanese

FAMILY ACC. NUM. COUNT: 1

PATENT INFORMATION:

PATENT NO.	KIND	DATE	APPLICATION NO.	DATE
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JP 2002359002	A	20021213	JP 2001-162306	200105 30

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PRIORITY APPLN. INFO.: JP 2001-162306
200105
30

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AB The battery is a Li battery, and the electrolyte solution uses a lactone based
nonaq. solvent mixture containing 0.1-10% aromatic N-containing heterocyclic
compound

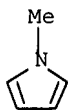
IT **96-54-8**, 1-Methylpyrrole

RL: DEV (Device component use); USES (Uses)

(nonaq. solvent mixts. containing aromatic nitrogen heterocyclic compds.
for secondary lithium battery **electrolyte** solns.)

RN 96-54-8 HCAPLUS

CN 1H-Pyrrole, 1-methyl- (CA INDEX NAME)



IC ICM H01M010-40
ICS H01M004-02; H01M004-58
CC 52-2 (Electrochemical, Radiational, and Thermal Energy Technology)
IT Battery **electrolytes**
(**nonaq.** solvent mixts. containing aromatic nitrogen heterocyclic compds. for secondary lithium battery electrolyte solns.)
IT 91-22-5, Quinoline, uses 96-48-0, γ -Butyrolactone
96-54-8, 1-Methylpyrrole 109-06-8, α -Picoline
289-80-5, Pyridazine 289-96-3, 1,2,3-Triazine 872-36-6, Vinylene carbonate 14283-07-9, Lithium fluoroborate 38222-83-2, 2,6-Di-tert-butyl-4-methylpyridine
RL: DEV (Device component use); USES (Uses)
(**nonaq.** solvent mixts. containing aromatic nitrogen heterocyclic compds. for secondary lithium battery **electrolyte** solns.)

L41 ANSWER 6 OF 18 HCAPLUS COPYRIGHT 2007 ACS on STN
ACCESSION NUMBER: 2002:539403 HCAPLUS Full-text
DOCUMENT NUMBER: 137:102569
TITLE: Redox-type electrolytic capacitors
INVENTOR(S): Aoki, Yoshifumi; Nakano, Hideyuki; Ukyo, Yoshio
PATENT ASSIGNEE(S): Toyota Central Research and Development Laboratories, Inc., Japan
SOURCE: Jpn. Kokai Tokkyo Koho, 6 pp.
CODEN: JKXXAF
DOCUMENT TYPE: Patent
LANGUAGE: Japanese
FAMILY ACC. NUM. COUNT: 1
PATENT INFORMATION:

PATENT NO.	KIND	DATE	APPLICATION NO.	DATE
-----	----	-----	-----	
JP 2002203742	A	20020719	JP 2000-401598	200012 28

PRIORITY APPLN. INFO.: <-- JP 2000-401598
200012
28

AB The title capacitors comprise (1) electrodes containing a polymer conductor impregnant and a support for the impregnant and (2) a supporting-salt **non-aqueous** organic **electrolyte** solution The **non-aqueous electrolyte** solution addnl. contains the conductive monomer as an additive to make the polymer conductor. The support may be carbonaceous materials and/or transition metal complex oxides. The supporting-salt may be Li⁺, Na⁺, and/or NH₄⁺ salts. The conductive monomer may be acetylene, thiophene, pyrrole, naphthene, and/or their derivs. The capacitors easily manufacturable provides excellent input/output characteristics and large capacitance.
IT 109-97-7D, Pyrrole, derivs.
RL: MOA (Modifier or additive use); PRP (Properties); TEM (Technical

or engineered material use); USES (Uses)
(polymer/monomer impregnant **electrolytes**; redox-type
electrolytic capacitors)

RN 109-97-7 HCAPLUS

CN 1H-Pyrrole (CA INDEX NAME)



IC ICM H01G009-00

ICS H01G009-038; H01G009-058; H01G009-22; H01M004-02; H01M004-62;
H01M010-40

CC 76-10 (Electric Phenomena)

Section cross-reference(s): 38, 72

IT **Electrolytes**

(**non-aqueous** organic solution; redox-type electrolytic
capacitors)

IT 74-86-2D, Acetylene, derivs. 109-97-7D, Pyrrole, derivs.

110-02-1D, Thiophene, derivs. 270-82-6, Isothianaphthene

503-17-3, 2-Butyne 18794-77-9, 2-Hexylthiophene

RL: MOA (Modifier or additive use); PRP (Properties); TEM (Technical
or engineered material use); USES (Uses)

(polymer/monomer impregnant **electrolytes**; redox-type
electrolytic capacitors)

L41 ANSWER 7 OF 18 HCAPLUS COPYRIGHT 2007 ACS on STN

ACCESSION NUMBER: 2002:313469 HCAPLUS Full-text

DOCUMENT NUMBER: 136:343312

TITLE: **Nonaqueous electrolyte**

solution and secondary lithium battery using the
electrolyte solution

INVENTOR(S): Hamamoto, Shunichi; Abe, Hiroshi; Ushikoshi,
Yoshihiro; Matsumori, Yasuo

PATENT ASSIGNEE(S): Ube Industries, Ltd., Japan

SOURCE: Jpn. Kokai Tokkyo Koho, 10 pp.

CODEN: JKXXAF

DOCUMENT TYPE: Patent

LANGUAGE: Japanese

FAMILY ACC. NUM. COUNT: 1

PATENT INFORMATION:

PATENT NO.	KIND	DATE	APPLICATION NO.	DATE
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JP 2002124298	A	20020426	JP 2000-315411	200010 16

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PRIORITY APPLN. INFO.:

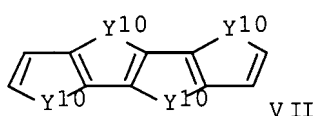
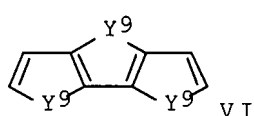
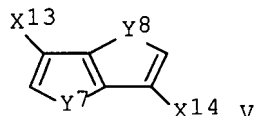
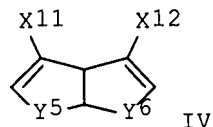
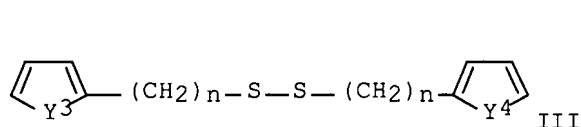
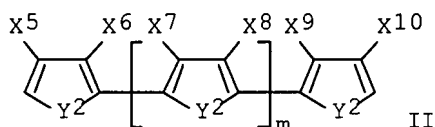
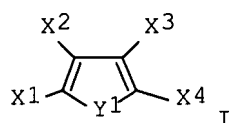
JP 2000-315411

200010
16

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OTHER SOURCE(S): MARPAT 136:343312

GI



AB The electrolyte solution contains 0.01-0.8% of a heterocyclic compound selected from I-VII, where Y1-10 = O, S, or alkylamino group, X1-14 = H, C1-12 alkyl, C7-15 aralkyl, halogen, Cq-12 alkylsilyl group, and X1 and X2, X2 and X3, X3 and X4, X5 and X6, X7 and X8, X9 and X10, and X11 and X12 may combine to form a (branched) C3-12 alkylene group or (branched) C1-6 alkylene dioxy group, m and n = 0-2 integers.

IT **96-54-8**, N-Methylpyrrole

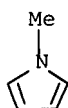
RL: MOA (Modifier or additive use); USES (Uses)

(**nonaq. electrolyte** solns. containing

heterocyclic compds. for secondary lithium batteries)

RN 96-54-8 HCAPLUS

CN 1H-Pyrrole, 1-methyl- (CA INDEX NAME)



IC ICM H01M010-40

CC 52-2 (Electrochemical, Radiational, and Thermal Energy Technology)

IT Battery **electrolytes**

(**nonaq. electrolyte** solns. containing

heterocyclic compds. for secondary lithium batteries)

IT 96-49-1, Ethylene carbonate 105-58-8, Diethyl carbonate

623-53-0, Ethyl methyl carbonate 21324-40-3, Lithium hexafluorophosphate

RL: DEV (Device component use); USES (Uses)

(**nonaq. electrolyte** solns. containing

heterocyclic compds. for secondary lithium batteries)

IT **96-54-8**, N-Methylpyrrole 251-41-2, Thieno[3,2-b]thiophene

492-97-7, 2,2'-Bithiophene 616-44-4, 3-Methylthiophene

3593-75-7, Dithieno[3,2-b:2',3'-d]thiophene 4437-20-1, Furfuryl

disulfide 17249-80-8, 3-Chlorothiophene 22037-28-1, 3-Bromofuran

126213-50-1, 3,4-Ethylenedioxy thiophene

RL: MOA (Modifier or additive use); USES (Uses)

(**nonaq. electrolyte** solns. containing

heterocyclic compds. for secondary lithium batteries)

L41 ANSWER 8 OF 18 HCAPLUS COPYRIGHT 2007 ACS on STN
 ACCESSION NUMBER: 2002:104924 HCAPLUS Full-text
 DOCUMENT NUMBER: 136:153910
 TITLE: Manufacture of secondary **nonaqueous electrolyte** battery containing polymer electrolyte
 INVENTOR(S): Nanamoto, Katsuya; Kuwahara, Yoshihiro; Hazumi, Takeshi; Matsue, Naoto; Imai, Koichi; Tagawa, Kazunori
 PATENT ASSIGNEE(S): Japan Storage Battery Co., Ltd., Japan; GS-Melcotec Co., Ltd.
 SOURCE: Jpn. Kokai Tokkyo Koho, 6 pp.
 CODEN: JKXXAF
 DOCUMENT TYPE: Patent
 LANGUAGE: Japanese
 FAMILY ACC. NUM. COUNT: 1
 PATENT INFORMATION:

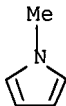
PATENT NO.	KIND	DATE	APPLICATION NO.	DATE
-----	----	-----	-----	
JP 2002042875	A	20020208	JP 2000-222783	200007 24

PRIORITY APPLN. INFO.: <-- JP 2000-222783
 200007
 24

AB The battery, having a cathode and/or an anode containing a polymer electrolyte, is prepared by impregnating the electrode active mass layer with the polymer, by passing the electrode through a solution of the polymer, extracting the solvent with water from the impregnated electrode, drying, and impregnating the polymer with an electrolyte solution; where deionized water having cond $\leq 5 \mu\text{S}/\text{cm}$ is used for extracting the solvent.

IT **96-54-8**, N-Methylpyrrole
 RL: NUU (Other use, unclassified); REM (Removal or disposal); PROC (Process); USES (Uses)
 (extracting agent in manufacture of polymer **electrolyte** impregnated electrodes for secondary lithium batteries)

RN **96-54-8** HCAPLUS
 CN 1H-Pyrrole, 1-methyl- (CA INDEX NAME)



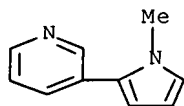
IC ICM H01M010-40
 ICS H01M004-02; H01M004-04
 CC 52-2 (Electrochemical, Radiational, and Thermal Energy Technology)
 IT **96-54-8**, N-Methylpyrrole
 RL: NUU (Other use, unclassified); REM (Removal or disposal); PROC (Process); USES (Uses)

(extracting agent in manufacture of polymer **electrolyte**
impregnated electrodes for secondary lithium batteries)

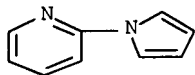
L41 ANSWER 9 OF 18 HCAPLUS COPYRIGHT 2007 ACS on STN
ACCESSION NUMBER: 2002:47670 HCAPLUS Full-text
DOCUMENT NUMBER: 136:88439
TITLE: **Nonaqueous electrolytic**
solution for secondary battery
INVENTOR(S): Hiroaki, Itagaki; Chikara, Kiyohara
PATENT ASSIGNEE(S): Mitsubishi Chemical Corporation, Japan
SOURCE: Eur. Pat. Appl., 16 pp.
CODEN: EPXXDW
DOCUMENT TYPE: Patent
LANGUAGE: English
FAMILY ACC. NUM. COUNT: 1
PATENT INFORMATION:

PATENT NO.	KIND	DATE	APPLICATION NO.	DATE
EP 1172878	A2	20020116	EP 2001-116675	20010716
EP 1172878	A3	20050525		
R: AT, BE, CH, DE, DK, ES, FR, GB, GR, IT, LI, LU, NL, SE, MC, PT, IE, SI, LT, LV, FI, RO				
JP 2002093462	A	20020329	JP 2001-205661	20010706
US 2002025477	A1	20020228	US 2001-903750	20010713
US 6767671	B2	20040727		
PRIORITY APPLN. INFO.:			JP 2000-213624	20000714

OTHER SOURCE(S): MARPAT 136:88439
AB A **nonaq. electrolytic** solution (containing at least an organic solvent and a lithium salt further containing a particular pyridine compound) is capable of depressing deterioration of battery properties in a high temperature environment. A secondary battery is also provided.
IT **487-19-4**, 3-(1-Methylpyrrol-2-yl)pyridine **50966-74-0**
RL: MOA (Modifier or additive use); USES (Uses)
(**nonaq. electrolytic** solution for secondary battery)
RN 487-19-4 HCAPLUS
CN Pyridine, 3-(1-methyl-1H-pyrrol-2-yl)- (CA INDEX NAME)



RN 50966-74-0 HCAPLUS
 CC Pyridine, 2-(1H-pyrrol-1-yl)- (9CI) (CA INDEX NAME)



IC ICM H01M010-40
 CC 52-2 (Electrochemical, Radiational, and Thermal Energy Technology)
 ST battery secondary **nonaq electrolyte** pyridine
 compd additive
 IT Transition metal oxides
 RL: DEV (Device component use); USES (Uses)
 (lithiated; **nonaq. electrolytic** solution for
 secondary battery)
 IT Secondary batteries
 (lithium; **nonaq. electrolytic** solution for
 secondary battery)
 IT Battery **electrolytes**
 (**nonaq. electrolytic** solution for secondary
 battery)
 IT Carbonaceous materials (technological products)
 RL: DEV (Device component use); USES (Uses)
 (**nonaq. electrolytic** solution for secondary
 battery)
 IT Carbon black, uses
 RL: MOA (Modifier or additive use); USES (Uses)
 (**nonaq. electrolytic** solution for secondary
 battery)
 IT Fluoropolymers, uses
 RL: MOA (Modifier or additive use); USES (Uses)
 (**nonaq. electrolytic** solution for secondary
 battery)
 IT 96-49-1, Ethylene carbonate 105-58-8, Diethyl carbonate
 21324-40-3, Lithium hexafluorophosphate 39457-42-6, Lithium
 manganese oxide 52627-24-4, Cobalt lithium oxide 53027-29-5,
 Iron Lithium manganese oxide 61179-01-9, Aluminum Lithium
 manganese oxide 133782-19-1, Lithium manganese vanadium oxide
 145896-59-9, Aluminum lithium manganese oxide Al_{0.1}LiMn_{1.9}O₄
 153327-00-5, Gallium Lithium manganese oxide 162684-16-4, Lithium
 manganese nickel oxide 187156-09-8, Lithium manganese zinc oxide
 191538-04-2, Copper Lithium manganese oxide 204450-96-4, Chromium
 Lithium manganese oxide 208394-04-1, Lithium manganese titanium
 oxide 214536-41-1, Cobalt Lithium manganese oxide
 RL: DEV (Device component use); USES (Uses)
 (**nonaq. electrolytic** solution for secondary
 battery)
 IT 91-02-1, 2-Benzoylpyridine 100-70-9, 2-Cyanopyridine 114-91-0
 372-48-5, 2-Fluoropyridine **487-19-4**, 3-(1-Methylpyrrol-2-
 yl)pyridine 539-32-2, 3-Butylpyridine 580-35-8,
 2,4,6-Triphenylpyridine 585-48-8, 2,6-Ditert-Butylpyridine
 622-39-9, 2-Propylpyridine 644-98-4, 2-IsoPropylpyridine
 696-30-0, 4-IsoPropylpyridine 700-16-3, Pentafluoropyridine
 702-16-9, 2-Methyl-5-butylpyridine 1122-62-9, 2-Acetylpyridine
 1122-81-2, 4-Propylpyridine 1129-69-7, 2-Hexylpyridine
 1628-89-3, 2-Methoxypyridine 1658-42-0, Methyl 2-Pyridylacetate
 2057-49-0, 4-(3-Phenylpropyl)pyridine 2294-76-0, 2-Pentylpyridine

2456-81-7, 4-(1-Pyrrolidiny)pyridine 2524-52-9, 2-Pyridine
 carboxylic acid, ethyl ester 2530-26-9, 3-Nitropyridine
 2739-97-1, 2-(Cyanomethyl)pyridine 2767-90-0, 4-Piperidinopyridine
 2961-47-9, 4-(5-Nonyl)pyridine 2961-49-1 3796-23-4,
 3-Trifluoromethylpyridine 3978-81-2, 4-tert-Butylpyridine
 3980-49-2 4673-31-8, 3-Propylpyridine 4783-68-0,
 2-Phenoxy pyridine 4810-79-1, 4-IsoButylpyridine 4810-86-0
 5051-98-9 5335-75-1, 4-Butylpyridine 5402-34-6 5683-33-0,
 2-Dimethylaminopyridine 5944-41-2, 2-tert-Butylpyridine
 6831-86-3, 2-tert-Butyl-6-methylpyridine 6972-69-6,
 N,N-Dimethylnicotinamide 7295-76-3, 3-Methoxypyridine 7399-50-0,
 2-(3-Pentyl)pyridine 9002-84-0, Ptfе 17452-27-6,
 3-Pyridylisothiocyanate 20336-15-6, 2,4,6-Tritert-Butylpyridine
 21298-55-5, 2-(3-Thienyl)pyridine 24937-79-9, Pvdф 35182-51-5,
 4-(3-Pentyl)pyridine 38222-83-2, 2,6-Ditert-Butyl-4-methylpyridine
 38222-90-1 40055-37-6 40089-91-6, 4-Octylpyridine
50966-74-0 64001-70-3, 4-(1,3,4)Oxadiazol-2-ylpyridine
 67580-61-4, 4-(2-Diethylaminoethyl)pyridine 70380-75-5,
 5-(Pyrid-4-yl)oxazole 80401-50-9, 2-Undecylpyridine 80866-95-1,
 3-(Pyrrol-1-ylmethyl)pyridine 82993-35-9 83978-69-2 87451-35-2
 97691-20-8 102253-71-4, 4-(4-Pyridyl)-1,2,3-thiadiazole
 387367-45-5 387367-57-9 387367-60-4

RL: MOA (Modifier or additive use); USES (Uses)
 (nonaq. electrolytic solution for secondary
 battery)

L41 ANSWER 10 OF 18 HCAPLUS COPYRIGHT 2007 ACS on STN

ACCESSION NUMBER: 2001:485540 HCAPLUS Full-text

DOCUMENT NUMBER: 135:95152

TITLE: **Nonaqueous-electrolyte**

solution containing organic additive and battery
 using it

INVENTOR(S): Yamada, Kazuhiro; Saito, Toshiya; Taki,
 Takayuki; Asano, Satoshi; Takatsuna, Kazutoshi

PATENT ASSIGNEE(S): Tonen Chemical Corp., Japan

SOURCE: Jpn. Kokai Tokkyo Koho, 8 pp.

CODEN: JKXXAF

DOCUMENT TYPE: Patent

LANGUAGE: Japanese

FAMILY ACC. NUM. COUNT: 1

PATENT INFORMATION:

PATENT NO.	KIND	DATE	APPLICATION NO.	DATE
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JP 2001185212	A	20010706	JP 1999-364694	199912 22

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PRIORITY APPLN. INFO.: JP 1999-364694

199912
22

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AB The electrolyte solution contains ≥ 1 of compound selected from thioalkylene group-
 containing organosilicon compound, dialkoxysilane compound, trialkoxysilane
 compound, pyrrole and its derivative, pyrrolidone and its derivative, pyrrolidine
 and its derivative, N-containing onium salt, S-containing onium salt, P-containing
 onium salt, unsatd. hydrocarbon-containing sulfone compound, dialkylsulfide
 compound, cyclic compound containing ≥ 3 of S atoms, diketone compound, acrylate
 ester, methacrylate ester, carbazate compound, epoxy compound, alkenyl group-

containing oxolane, and phosphite. A nonaq. battery using the above electrolyte solution is also claimed. The electrolyte solution shows low irreversible capacity by preventing decomposition of solvents and the battery provides long cycle life.

IT 109-97-7, Pyrrole

RL: DEV (Device component use); MOA (Modifier or additive use); USES (Uses)

(**nonaq.-electrolyte** solution containing organic additive for battery having long cycle life)

RN 109-97-7 HCAPLUS

CN 1H-Pyrrole (CA INDEX NAME)



IC ICM H01M010-40

ICS H01M006-16

CC 52-2 (Electrochemical, Radiational, and Thermal Energy Technology)

ST **nonaq electrolyte** soln additive battery

IT Ketones, uses

RL: DEV (Device component use); MOA (Modifier or additive use); USES (Uses)

(diketones; **nonaq.-electrolyte** solution containing organic additive for battery having long cycle life)

IT Secondary batteries

(lithium; **nonaq.-electrolyte** solution containing organic additive for battery having long cycle life)

IT Battery **electrolytes**

(**nonaq.-electrolyte** solution containing organic additive for battery having long cycle life)

IT Epoxides

Phosphonium compounds

Quaternary ammonium compounds, uses

Sulfonium compounds

RL: DEV (Device component use); MOA (Modifier or additive use); USES (Uses)

(**nonaq.-electrolyte** solution containing organic additive for battery having long cycle life)

IT 21324-40-3, Lithium hexafluorophosphate

RL: DEV (Device component use); USES (Uses)

(**electrolyte; nonaq.-electrolyte**

solution containing organic additive for battery having long cycle life)

IT 77-77-0 88-12-0, uses 96-33-3, Methyl acrylate 106-92-3, Allyl glycidyl ether 109-97-7, Pyrrole 122-52-1 123-54-6, 2,4-Pentanedione, uses 352-93-2 429-06-1 616-45-5, Pyrrolidone 665-49-6 872-50-4, N-Methylpyrrolidone, uses 930-35-8, 1,3-Dithiole-2-thione 2768-02-7 3984-22-3 4420-74-0 6294-89-9 16881-77-9 18165-76-9 345270-09-9

RL: DEV (Device component use); MOA (Modifier or additive use); USES (Uses)

(**nonaq.-electrolyte** solution containing organic additive for battery having long cycle life)

IT 96-48-0, γ -Butyrolactone 96-49-1, Ethylene carbonate

108-32-7, Propylene carbonate 616-38-6, Dimethyl carbonate

RL: DEV (Device component use); USES (Uses)

(solvent; **nonaq.-electrolyte** solution containing organic additive for battery having long cycle life)

L41 ANSWER 11 OF 18 HCAPLUS COPYRIGHT 2007 ACS on STN
 ACCESSION NUMBER: 2001:356690 HCAPLUS Full-text
 DOCUMENT NUMBER: 134:342553
 TITLE: Secondary **nonaqueous electrolyte** batteries
 INVENTOR(S): Shiga, Toru; Koiwai, Akihiko
 PATENT ASSIGNEE(S): Toyota Central Research and Development Laboratories, Inc., Japan
 SOURCE: Jpn. Kokai Tokkyo Koho, 8 pp.
 CODEN: JKXXAF
 DOCUMENT TYPE: Patent
 LANGUAGE: Japanese
 FAMILY ACC. NUM. COUNT: 1
 PATENT INFORMATION:

PATENT NO. -----	KIND ----	DATE -----	APPLICATION NO. -----	DATE
JP 2001135350	A	20010518	JP 1999-313565	199911 04

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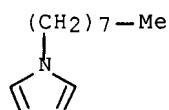
PRIORITY APPLN. INFO.: JP 1999-313565

199911
04

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AB The batteries have cathodes containing Li transition metal oxide and a binder, anodes, and an electrolyte solution containing a Li salt dissolved in an organic solvent; where the electrolyte solution contains 0.1-2 volume% of ≥1 alkyl group containing monomers, electro-polymerizable within the battery operation voltage, to form conductive polymers.

IT **50966-65-9**, 1-Octylpyrrole
 RL: MOA (Modifier or additive use); USES (Uses)
 (**electrolyte** solns. containing electro-polymerizable monomers of conductive polymers in secondary lithium batteries)
 RN 50966-65-9 HCAPLUS
 CN 1H-Pyrrole, 1-octyl- (9CI) (CA INDEX NAME)



IC ICM H01M010-40
 CC 52-2 (Electrochemical, Radiational, and Thermal Energy Technology)
 IT 616-44-4, 3-Methylthiophene 1693-86-3, 3-Hexylthiophene
 34722-01-5, 3-Butylthiophene **50966-65-9**, 1-Octylpyrrole
 65016-55-9, 3-Decylthiophene
 RL: MOA (Modifier or additive use); USES (Uses)
 (**electrolyte** solns. containing electro-polymerizable monomers of conductive polymers in secondary lithium batteries)

L41 ANSWER 12 OF 18 HCAPLUS COPYRIGHT 2007 ACS on STN

ACCESSION NUMBER: 1999:439925 HCAPLUS Full-text
 DOCUMENT NUMBER: 131:76199
 TITLE: Lithium secondary battery with
 nonaqueous electrolyte and
 lithium manganate cathode.
 INVENTOR(S): Suzuki, Masahiko; Nagura, Hideaki
 PATENT ASSIGNEE(S): Fuji Electrochemical Co., Ltd., Japan
 SOURCE: Jpn. Kokai Tokkyo Koho, 6 pp.
 CODEN: JKXXAF
 DOCUMENT TYPE: Patent
 LANGUAGE: Japanese
 FAMILY ACC. NUM. COUNT: 1
 PATENT INFORMATION:

PATENT NO.	KIND	DATE	APPLICATION NO.	DATE
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JP 11191432	A	19990713	JP 1997-360466	199712 26

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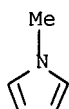
PRIORITY APPLN. INFO.:

JP 1997-360466

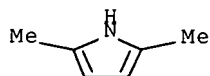
199712
26

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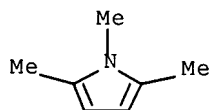
AB In Li secondary battery using a Li salt-dissolved organic solvent as **nonaq. electrolyte** and Li manganate as cathode. 0.5-8 % Pyrrole derivative (e.g., 3-acetyl-1-methylpyrrole) is added into the **nonaq. electrolyte** to serve as a film formable substance, and the Li manganate of the cathode has sp. surface area 0.1-1 m²/g and Li/Mn ratio 1.05/2 to 1.25/2. The Li salt is Li hexafluoro-phosphate.
 IT 96-54-8 625-84-3, 2,5-Dimethylpyrrole
 930-87-0, 1,2,5-Trimethylpyrrole
 RL: NUU (Other use, unclassified); USES (Uses)
 (lithium-secondary battery with **nonaq. electrolyte** and lithium manganate cathode)
 RN 96-54-8 HCAPLUS
 CN 1H-Pyrrole, 1-methyl- (CA INDEX NAME)



RN 625-84-3 HCAPLUS
 CN 1H-Pyrrole, 2,5-dimethyl- (CA INDEX NAME)



RN 930-87-0 HCAPLUS
 CN 1H-Pyrrole, 1,2,5-trimethyl- (CA INDEX NAME)



IC ICM H01M010-40
ICS H01M004-02; H01M004-58
CC 52-2 (Electrochemical, Radiational, and Thermal Energy Technology)
ST lithium secondary battery **nonaq electrolyte**;
pyrrole deriv additive **nonaq electrolyte**
IT Surface area
(lithium secondary battery with **nonaq.**
electrolyte and lithium manganate cathode)
IT Cathodes
(lithium-secondary battery with **nonaq.**
electrolyte and lithium manganate cathode)
IT Secondary batteries
(lithium; lithium secondary battery with **nonaq.**
electrolyte and lithium manganate cathode)
IT **Electrolytes**
(**nonaq.**; lithium-secondary battery with **nonaq**
. electrolyte and lithium manganate cathode)
IT 39457-42-6, Lithium manganese oxide
RL: DEV (Device component use); USES (Uses)
(lithium-secondary battery with **nonaq.**
electrolyte and lithium manganate cathode)
IT 96-54-8 625-84-3, 2,5-Dimethylpyrrole
930-87-0, 1,2,5-Trimethylpyrrole 932-16-1,
2-Acetyl-1-methylpyrrole 932-62-7, 3-Acetyl-1-methylpyrrole
1003-90-3, 2,3,4,5-Tetramethylpyrrole 5044-31-5,
1-Acetyl-2.5-dimethylpyrrole
RL: NUU (Other use, unclassified); USES (Uses)
(lithium-secondary battery with **nonaq.**
electrolyte and lithium manganate cathode)
IT 21324-40-3, Lithium hexafluoro-phosphate
RL: TEM (Technical or engineered material use); USES (Uses)
(**nonaq. electrolytes** containing;
lithium-secondary battery with **nonaq.**
electrolyte and lithium manganate cathode)

L41 ANSWER 13 OF 18 HCAPLUS COPYRIGHT 2007 ACS on STN
ACCESSION NUMBER: 1997:234259 HCAPLUS Full-text
DOCUMENT NUMBER: 126:227649
TITLE: Secondary **nonaqueous**
electrolyte batteries
INVENTOR(S): Usami, Kyohei; Kawai, Miho; Maeda, Yutaka
PATENT ASSIGNEE(S): Denso KK, Japan; Denso Co., Ltd.
SOURCE: Jpn. Kokai Tokkyo Koho, 6 pp.
CODEN: JKXXAF
DOCUMENT TYPE: Patent
LANGUAGE: Japanese
FAMILY ACC. NUM. COUNT: 1
PATENT INFORMATION:

PATENT NO.	KIND	DATE	APPLICATION NO.	DATE
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JP 09045369

A

19970214

JP 1996-150254

199605

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JP 3536534

B2

20040614

PRIORITY APPLN. INFO.:

JP 1995-149631

A

199505

23

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AB The batteries contain a Li intercalating cathode, a Li (alloy) or Li intercalating anode, a separator, and a **nonaq. electrolyte** soln; where the electrolyte solution contains, in addition to an organic solvent and an electrolyte salt, a polymer hardenable by over(dis)charging or temperature rising of the battery or an electrolytically polymerizable monomer. The polymer or monomer may be sealed in microcapsules. The polymer is a protein selected from albumin, casein, actin, myosin, keratin, and collagen; and the monomer is selected from derivs. of naphthalene, anthracene, polyfluorene, pyrrole, thiophene, and aniline. Linear carbonate esters may be used in place of the polymer or monomer. These additives improves safety of the batteries.

IT 109-97-7, Pyrrole

RL: MOA (Modifier or additive use); USES (Uses)
(derivative, **electrolytically** polymerizable; additives in
secondary lithium battery **electrolyte** for safety)

RN 109-97-7 HCAPLUS

CN 1H-Pyrrole (CA INDEX NAME)



IC ICM H01M010-40

ICS H01M010-40

CC 52-2 (Electrochemical, Radiational, and Thermal Energy Technology)

IT 62-53-3, Aniline, uses 91-20-3, Naphthalene, uses 109-97-7
, Pyrrole 110-02-1, Thiophene 120-12-7, Anthracene, uses
95270-88-5, Polyfluorene

RL: MOA (Modifier or additive use); USES (Uses)
(derivative, **electrolytically** polymerizable; additives in
secondary lithium battery **electrolyte** for safety)

L41 ANSWER 14 OF 18 HCAPLUS COPYRIGHT 2007 ACS on STN

ACCESSION NUMBER: 1996:494297 HCAPLUS Full-text

DOCUMENT NUMBER: 125:119574

TITLE: Secondary lithium batteries containing additives
in electrolyte solutions

INVENTOR(S): Yamamoto, Tamotsu; Yoshida, Kensuke; Tsutsumi,
Masami; Watanabe, Isao; Myashita, Tsutomu

PATENT ASSIGNEE(S): Fujitsu Ltd, Japan

SOURCE: Jpn. Kokai Tokkyo Koho, 6 pp.

CODEN: JKXXAF

DOCUMENT TYPE: Patent

LANGUAGE: Japanese

FAMILY ACC. NUM. COUNT: 1

PATENT INFORMATION:

PATENT NO.

KIND

DATE

APPLICATION NO.

DATE

JP 08138735

A

19960531

JP 1994-281780

199411

16

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PRIORITY APPLN. INFO.:

JP 1994-281780

199411

16

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AB The batteries use a **nonaq. electrolyte** solution having a Li salt dissolved in an organic solvent and pyrrole or its derivative and metal halides as additives. These batteries have long cycle life.

IT 109-97-7, Pyrrole 625-84-3, 2,5-Dimethylpyrrole
RL: MOA (Modifier or additive use); USES (Uses)
(**electrolyte** solns. containing aluminum iodide and pyrrole additives for secondary lithium batteries for cycle life)

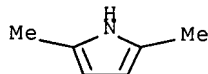
RN 109-97-7 HCAPLUS

CN 1H-Pyrrole (CA INDEX NAME)



RN 625-84-3 HCAPLUS

CN 1H-Pyrrole, 2,5-dimethyl- (CA INDEX NAME)



IC ICM H01M010-40

CC 52-2 (Electrochemical, Radiational, and Thermal Energy Technology)

IT 109-97-7, Pyrrole 625-84-3, 2,5-Dimethylpyrrole
7784-23-8, Aluminum iodide
RL: MOA (Modifier or additive use); USES (Uses)
(**electrolyte** solns. containing aluminum iodide and pyrrole additives for secondary lithium batteries for cycle life)

L41 ANSWER 15 OF 18 HCAPLUS COPYRIGHT 2007 ACS on STN

ACCESSION NUMBER: 1992:430495 HCAPLUS Full-text

DOCUMENT NUMBER: 117:30495

TITLE: **Non-aqueous****electrolyte** solutions for secondary lithium batteries and the batteries

INVENTOR(S): Okazaki, Yoji; Sato, Hideyuki

PATENT ASSIGNEE(S): Furukawa Denchi K. K., Japan; Furukawa Denki

Kogyo K. K.

SOURCE: Jpn. Kokai Tokkyo Koho, 4 pp.

CODEN: JKXXAF

DOCUMENT TYPE: Patent

LANGUAGE: Japanese

FAMILY ACC. NUM. COUNT: 1

PATENT INFORMATION:

PATENT NO.	KIND	DATE	APPLICATION NO.	DATE
JP 04056079	A	19920224	JP 1990-163625	19900621

PRIORITY APPLN. INFO.:

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JP 1990-163625

19900621

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AB The electrolyte solns. contain ≥ 1 Me-substituted pyrroles, preferably at 0.1-5 volume%. Batteries using these electrolytes have long cycle life.

IT 109-97-7, 1H-Pyrrole

RL: USES (Uses)

(Me derivs., **electrolyte** solns. containing, for secondary lithium batteries)

RN 109-97-7 HCAPLUS

CN 1H-Pyrrole (CA INDEX NAME)



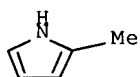
IT 636-41-9, 2-Methylpyrrole

RL: USES (Uses)

(**electrolyte** solns. containing, for secondary lithium batteries)

RN 636-41-9 HCAPLUS

CN 1H-Pyrrole, 2-methyl- (CA INDEX NAME)



IC ICM H01M010-40

CC 52-2 (Electrochemical, Radiational, and Thermal Energy Technology)

IT 109-97-7, 1H-Pyrrole

RL: USES (Uses)

(Me derivs., **electrolyte** solns. containing, for secondary lithium batteries)

IT 636-41-9, 2-Methylpyrrole

RL: USES (Uses)

(**electrolyte** solns. containing, for secondary lithium batteries)

L41 ANSWER 16 OF 18 HCAPLUS COPYRIGHT 2007 ACS on STN

ACCESSION NUMBER: 1987:602182 HCAPLUS Full-text

DOCUMENT NUMBER: 107:202182

TITLE: Secondary nonaqueous batteries

INVENTOR(S): Osaki, Takahisa; Yamada, Shuji

PATENT ASSIGNEE(S): Toshiba Corp., Japan

SOURCE: Jpn. Kokai Tokkyo Koho, 3 pp.
 CODEN: JKXXAF
 DOCUMENT TYPE: Patent
 LANGUAGE: Japanese
 FAMILY ACC. NUM. COUNT: 1
 PATENT INFORMATION:

PATENT NO.	KIND	DATE	APPLICATION NO.	DATE
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JP 62160671	A	19870716	JP 1986-171	19860107

PRIORITY APPLN. INFO.: <-- JP 1986-171 19860107

AB **Electrolytes** for **nonaq.** light-metal batteries contain thiophene and/or pyrrole. Thus, a test Li cell using a 1M LiAsF₆/propylene carbonate electrolyte showed extended cycle life when thiophene or pyrrole was added to the electrolyte at 5 mL/L.

IT **109-97-7, Pyrrole**
 RL: USES (Uses)
 (**electrolyte** containing, for lithium batteries)

RN 109-97-7 HCAPLUS
 CN 1H-Pyrrole (CA INDEX NAME)



IC ICM H01M010-40
 CC 52-2 (Electrochemical, Radiational, and Thermal Energy Technology)
 ST lithium battery **nonaq electrolyte**; thiophene
 lithium battery electrolyte; pyrrole lithium battery electrolyte
 IT **109-97-7, Pyrrole** 110-02-1, Thiophene
 RL: USES (Uses)
 (**electrolyte** containing, for lithium batteries)

L41 ANSWER 17 OF 18 HCAPLUS COPYRIGHT 2007 ACS on STN
 ACCESSION NUMBER: 1987:480996 HCAPLUS Full-text
 DOCUMENT NUMBER: 107:80996
 TITLE: Nonaqueous electrochemical cell
 INVENTOR(S): Whitney, Thomas A.; Foster, Donald L.
 PATENT ASSIGNEE(S): Duracell, Inc., USA
 SOURCE: U.S., 6 pp.
 CODEN: USXXAM
 DOCUMENT TYPE: Patent
 LANGUAGE: English
 FAMILY ACC. NUM. COUNT: 1
 PATENT INFORMATION:

PATENT NO.	KIND	DATE	APPLICATION NO.	DATE
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US 4670363	A	19870602	US 1986-910694	

198609
22

WO 8802188 A1 19880324 WO 1987-US2191

198708
31

W: AU, BR, DK, JP, KR
RW: AT, BE, CH, DE, FR, GB, IT, LU, NL, SE
AU 8780375 A 19880407 AU 1987-80375

198708
31

EP 282576 A1 19880921 EP 1987-906615

198708
31

R: AT, BE, CH, DE, FR, GB, IT, LI, LU, NL, SE
JP 01501026 T 19890406 JP 1987-506017

198708
31

CA 1282825 C 19910409 CA 1987-547554

198709
22

DK 8802823 A 19880707 DK 1988-2823

198805
24

PRIORITY APPLN. INFO.: US 1986-910694 A

198609
22

WO 1987-US2191 A

198708
31

AB An improved electrolyte for an alkali or alkaline earth metal battery comprises an alkali-metal or alkaline earth salt complexed with a monomeric or polymeric polyfunctional chelating tertiary amine containing ≥ 2 N atoms, a 1st solvent selected from aprotic aromatic organic solvents and their mixts., and a 2nd solvent selected from aprotic organic solvents having a dielec. constant $\epsilon \geq 20$ and their mixts. The 2nd solvent is present in an amount sufficient to increase the conductivity measured at 25° and 1 kHz to $\geq 10^{-3}/\Omega\text{-cm}$. The 1st solvent is selected from the group of C₆H₆, MePh, xylenes, pyridine, and N-methylpyrrole. The 2nd solvent is selected from the group of sulfolane, 3-methylsulfolane, and 3-methyl-2-oxazolidinone (I). The tertiary amine is selected from the group of pentamethyldiethylenetriamine (PMDT), tetramethylethylenediamine, tetramethylcyclohexanediamine, hexamethyltriethylenetetramine, and tris-(β -dimethylaminoethyl)amine, and their mixture. The resp. conductivities at 25° of 0.8 M LiI.PMDT in MePh, I, and 1:1 (volume) MePh-I were 1.3×10^{-5} , 6.2×10^{-3} , and $7.2 \times 10^{-3}/\Omega\text{-cm}$. High cycle lives of Li batteries having the invention electrolyte are also reported.

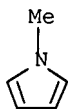
IT 96-54-8, N-Methylpyrrole

RL: USES (Uses)

(electrolytes with solvent mixts. containing, conductivity of, for batteries)

RN 96-54-8 HCAPLUS

CN 1H-Pyrrole, 1-methyl- (CA INDEX NAME)



IC ICM H01M006-14
 INCL 429196000
 CC 52-2 (Electrochemical, Radiational, and Thermal Energy Technology)
 Section cross-reference(s): 76
 ST lithium battery **nonaq electrolyte**; iodide
 lithium pentamethyldiethylenetriamine battery electrolyte; toluene
 methyloxazolidinone battery electrolyte; elec cond battery
 electrolyte
 IT 7550-35-8D, Lithium bromide, complexes with
 pentamethyldiethylenediamine
 RL: USES (Uses)
 (**electrolytes** containing, for **nonaq.** batteries)
 IT **96-54-8**, N-Methylpyrrole 108-32-7, Propylene carbonate
 108-88-3, Toluene, uses and miscellaneous 110-86-1, Pyridine, uses
 and miscellaneous 126-33-0, Sulfolane 646-06-0, Dioxolane
 19836-78-3, 3-Methyl-2-oxazolidinone
 RL: USES (Uses)
 (**electrolytes** with solvent mixts. containing, conductivity of, for
 batteries)

L41 ANSWER 18 OF 18 HCAPLUS COPYRIGHT 2007 ACS on STN
 ACCESSION NUMBER: 1985:135083 HCAPLUS Full-text
 DOCUMENT NUMBER: 102:135083
 TITLE: Lithium battery
 INVENTOR(S): Abraham, Kuzhikalail M.; Brummer, S. Barry;
 Foos, Joseph S.
 PATENT ASSIGNEE(S): USA
 SOURCE: U.S., 8 pp.
 CODEN: USXXAM
 DOCUMENT TYPE: Patent
 LANGUAGE: English
 FAMILY ACC. NUM. COUNT: 1
 PATENT INFORMATION:

PATENT NO.	KIND	DATE	APPLICATION NO.	DATE
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US 4489145	A	19841218	US 1983-542981	198310 18

PRIORITY APPLN. INFO.: <--
 US 1983-542981
 198310
 18
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OTHER SOURCE(S): MARPAT 102:135083

AB A Li battery has a **nonaq. electrolyte** containing additives such as 2-methylfuran (2Me-F) [534-22-5] or related cyclic or acrylic organic compds. Thus, sealed batteries containing 3 Li anodes and 2 TiS₂ cathodes arranged alternately with Li forming outer electrodes in the stack, polypropene separators, and 1.5M LiAsF₆-THF

electrolyte were prepared with (0.5 volume%) and without 2Me-F electrolyte additive. The batteries were charged and discharged to 3 and 1.6 V, resp. without the additive, batteries exhibited 6 and 7 cycles when cycled at 1 mA/cm² and a charge d. of 7 mA-h/cm², and 5 cycles when cycled at 1.5 mA/cm² and 10.5 mA-h/cm². The resp. values for batteries containing 2 Me-F additive were 92-111 and 17-18 cycles. Batteries containing the additive had also a good storage capability at 50°.

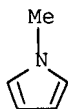
IT 96-54-8

RL: USES (Uses)

(battery organic **electrolyte** containing additive of,
lithium-titanium sulfide)

RN 96-54-8 HCAPLUS

CN 1H-Pyrrole, 1-methyl- (CA INDEX NAME)



IC ICM H01M010-40

INCL 429197000

CC 52-2 (Electrochemical, Radiational, and Thermal Energy Technology)

IT 96-54-8 110-00-9 110-87-2 534-22-5 554-14-3

625-86-5 638-02-8 1000-86-8 1191-99-7 1487-15-6 4045-44-7

RL: USES (Uses)

(battery organic **electrolyte** containing additive of,
lithium-titanium sulfide)

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L42 ANSWER 1 OF 14 HCAPLUS COPYRIGHT 2007 ACS on STN

ACCESSION NUMBER: 2006:923982 HCAPLUS Full-text

DOCUMENT NUMBER: 146:166175

TITLE: **Nonaqueous electrolyte** based
on thionaphthene for lithium batteries

INVENTOR(S): Jeon, Jong Ho; Kim, Hak Soo; Park, Myoung Kook;
Kim, Jong Seob

PATENT ASSIGNEE(S): Cheil Industries Inc., S. Korea

SOURCE: Repub. Korean Kongkae Taeho Kongbo, No pp. given
CODEN: KRXXA7

DOCUMENT TYPE: Patent

LANGUAGE: Korean

FAMILY ACC. NUM. COUNT: 1

PATENT INFORMATION:

PATENT NO.	KIND	DATE	APPLICATION NO.	DATE
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KR 2005066181	A	20050630	KR 2003-97432	200312 26

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PRIORITY APPLN. INFO.:

KR 2003-97432

200312
26

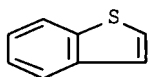
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AB This **nonaq. electrolyte** decrease swelling of a Li battery when stored at high temperature and it improves capacity characteristics at high temperature The **nonaq. electrolyte** solution comprises 100 parts by weight of an organic solvent where 0.8-2 M of a Li salt is dissolved; and 0.1-10 parts by weight of thionaphthene. Preferably the organic solvent is a mixture of a cyclic carbonate-based organic solvent and a linear carbonate-based organic solvent. Preferably the cyclic carbonate-based organic solvent is selected from the group consisting of ethylene carbonate, propylene carbonate and their mixture; and the linear carbonate-based organic solvent is selected from the group consisting of di-Me carbonate, di-Et carbonate, ethylmethyl carbonate, methylpropyl carbonate, ethylpropyl carbonate and their mixture

IT 95-15-8, Thionaphthene
 RL: TEM (Technical or engineered material use); USES (Uses)
 (nonaq. electrolyte based on thionaphthene
 for lithium batteries)

RN 95-15-8 HCAPLUS

CN Benzo[b]thiophene (CA INDEX NAME)



IC ICM H01M010-40

CC 52-2 (Electrochemical, Radiational, and Thermal Energy Technology)

ST **nonaq electrolyte** thionaphthene lithium battery

IT Secondary batteries
 (lithium; **nonaq. electrolyte** based on
 thionaphthene for lithium batteries)

IT Battery **electrolytes**
 (**nonaq. electrolyte** based on thionaphthene
 for lithium batteries)

IT 95-15-8, Thionaphthene 96-49-1, Ethylene carbonate
 105-58-8, Diethyl carbonate 108-32-7, Propylene carbonate
 616-38-6, Dimethyl carbonate 623-53-0, Ethylmethyl carbonate
 35363-40-7, Ethylpropyl carbonate 56525-42-9, Methylpropyl
 carbonate
 RL: TEM (Technical or engineered material use); USES (Uses)
 (**nonaq. electrolyte** based on thionaphthene
 for lithium batteries)

L42 ANSWER 2 OF 14 HCAPLUS COPYRIGHT 2007 ACS on STN

ACCESSION NUMBER: 2006:776339 HCAPLUS Full-text

DOCUMENT NUMBER: 145:252320

TITLE: **Nonaqueous electrolyte**
 solution for secondary lithium battery

INVENTOR(S): Jun, Jong Ho; Kim, Hak Su; Kim, Jong Seop; Yang,
 Ho Seok

PATENT ASSIGNEE(S): Cheil Industries Inc., S. Korea

SOURCE: Repub. Korean Kongkae Taeho Kongbo, No pp. given
 CODEN: KRXXA7

DOCUMENT TYPE: Patent

LANGUAGE: Korean

FAMILY ACC. NUM. COUNT: 1

PATENT INFORMATION:

PATENT NO.	KIND	DATE	APPLICATION NO.	DATE
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KR 2004080155

A

20040918

KR 2003-15029

200303
11

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PRIORITY APPLN. INFO.:

KR 2003-15029

200303
11

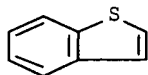
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AB A **nonaq. electrolyte** solution for a secondary lithium battery is provided, to improve electrochem. reactivity and stability to overcharge, thereby allowing a battery pack to be miniaturized by using no protection circuit or protection device. The electrolyte solution comprises 100 weight parts organic solvent mixture which consists of a cyclic carbonate-based organic solvent and a linear carbonate-based organic solvent and contains 0.8-2 M Li salt; and 0.1-10.0 weight parts of a halothionaphthene derivative

IT **95-15-8D**, Thionaphthene, halo derivs.
RL: TEM (Technical or engineered material use); USES (Uses)
(**electrolyte** solns. containing thionaphthene derivs. for secondary lithium batteries)

RN 95-15-8 HCAPLUS

CN Benzo[b]thiophene (CA INDEX NAME)



IC ICM H01M010-40

CC 52-2 (Electrochemical, Radiational, and Thermal Energy Technology)

ST secondary lithium battery **nonaq electrolyte** soln
halothionaphthene deriv

IT **95-15-8D**, Thionaphthene, halo derivs.
RL: TEM (Technical or engineered material use); USES (Uses)
(**electrolyte** solns. containing thionaphthene derivs. for secondary lithium batteries)

L42 ANSWER 3 OF 14 HCAPLUS COPYRIGHT 2007 ACS on STN

ACCESSION NUMBER: 2006:720248 HCAPLUS Full-text

DOCUMENT NUMBER: 145:252292

TITLE: **Nonaqueous electrolyte**
solution for secondary lithium battery

INVENTOR(S): Jun, Jong Ho; Kang, Yun Jeong; Kim, Hak Su; Kim, Jong Seop; Park, Myeong Guk; Yang, Ho Seok

PATENT ASSIGNEE(S): Cheil Industries Inc., S. Korea

SOURCE: Repub. Korean Kongkae Taeho Kongbo, No pp. given
CODEN: KRXXA7

DOCUMENT TYPE: Patent

LANGUAGE: Korean

FAMILY ACC. NUM. COUNT: 1

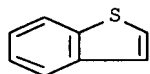
PATENT INFORMATION:

PATENT NO.	KIND	DATE	APPLICATION NO.	DATE
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KR 2004054079	A	20040625	KR 2002-80726	200212 17

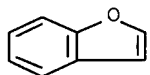
PRIORITY APPLN. INFO.:

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KR 2002-80726200212
17

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AB A **nonaq. electrolyte** solution for a lithium battery is provided, to suppress effectively a high temperature swelling property without deterioration of the properties of a battery. The **nonaq. electrolyte** solution comprises 100 weight parts organic solvent mixture which comprises a cyclic carbonate-based organic solvent and a linear carbonate-based organic solvent; 0.8-2.0 M Li salt; and 0.1-10.0 weight parts of a 2,3-benzofuran or thionaphthene derivative
IT **95-15-8**, Thionaphthene **271-89-6D**, 2,3-Benzofuran, derivs.
RL: MOA (Modifier or additive use); USES (Uses)
(**electrolyte** solns. containing benzofurans and thionaphthene derivs. for secondary lithium batteries)
RN 95-15-8 HCAPLUS
CN Benzo[b]thiophene (CA INDEX NAME)



RN 271-89-6 HCAPLUS
CN Benzofuran (CA INDEX NAME)



IC ICM H01M010-40
CC 52-2 (Electrochemical, Radiational, and Thermal Energy Technology)
IT **95-15-8**, Thionaphthene 96-49-1D, 1,3-Dioxolan-2-one, derivs. **271-89-6D**, 2,3-Benzofuran, derivs.
RL: MOA (Modifier or additive use); USES (Uses)
(**electrolyte** solns. containing benzofurans and thionaphthene derivs. for secondary lithium batteries)

L42 ANSWER 4 OF 14 HCAPLUS COPYRIGHT 2007 ACS on STN
ACCESSION NUMBER: 2006:689399 HCAPLUS Full-text
DOCUMENT NUMBER: 145:127638
TITLE: **Nonaqueous electrolyte**
solution for lithium secondary batteries
INVENTOR(S): Ahn, Sun Ho; Cho, Jeong Ju; Kim, Hyeong Jin;
Lee, Han Ho; Lee, Ho Chun; Lee, Jae Heon; Son,
Mi Yeong
PATENT ASSIGNEE(S): Lg Chem. Ltd., S. Korea
SOURCE: Repub. Korean Kongkae Taeho Kongbo, No pp. given
CODEN: KRXXA7
DOCUMENT TYPE: Patent
LANGUAGE: Korean
FAMILY ACC. NUM. COUNT: 1
PATENT INFORMATION:

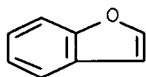
PATENT NO.	KIND	DATE	APPLICATION NO.	DATE
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KR 2004023870	A	20040320	KR 2002-55309	20020912

PRIORITY APPLN. INFO.: <-- KR 2002-55309 20020912

AB In this Li battery with a **nonaq. electrolyte** solution overcharge current is blocked through polymerization of electrolyte components by degradation due to oxidation, thereby improving safety. The **nonaq. electrolyte** solution comprises a Li salt, an electrolyte solution compound, 0.5-5% of a nonconductive polymer monomer, and 0.1-2% of a conductive polymer monomer. Preferably the nonconductive polymer monomer is cyclohexylbenzene, isopropylbenzene or 5-butylbenzene; and the conductive polymer monomer is biphenyl, 1-phenyl-1-cyclohexane or benzofuran. The Li secondary battery comprises a cathode, an anode, a porous separator, and the **nonaq. electrolyte** solution

IT 271-89-6, Benzofuran
 RL: DEV (Device component use); USES (Uses)
 (electrolyte containing; **nonaq. electrolyte** solution for lithium secondary batteries with safety feature)

RN 271-89-6 HCAPLUS
 CN Benzofuran (CA INDEX NAME)



IC ICM H01M010-40
 CC 52-2 (Electrochemical, Radiational, and Thermal Energy Technology)
 ST lithium secondary battery **nonaq electrolyte** safety
 IT Secondary batteries
 (lithium; **nonaq. electrolyte** solution for lithium secondary batteries with safety feature)

IT Battery **electrolytes** Safety
 (**nonaq. electrolyte** solution for lithium secondary batteries with safety feature)

IT 92-52-4, Biphenyl, uses 98-82-8, Isopropylbenzene 135-98-8
 271-89-6, Benzofuran 827-52-1
 RL: DEV (Device component use); USES (Uses)
 (electrolyte containing; **nonaq. electrolyte** solution for lithium secondary batteries with safety feature)

L42 ANSWER 5 OF 14 HCAPLUS COPYRIGHT 2007 ACS on STN
 ACCESSION NUMBER: 2004:753254 HCAPLUS Full-text
 DOCUMENT NUMBER: 141:228183
 TITLE: A **nonaqueous electrolyte** for lithium secondary battery
 INVENTOR(S): Kim, Jin-Hee; Kim, Jin-Sung; Hwang, Sang-Moon;

PATENT ASSIGNEE(S): Paik, Meen-Seon; Kim, Hak-Soo
 Samsung SDI Co., Ltd., S. Korea; Cheil
 Industries Inc.
 SOURCE: Eur. Pat. Appl., 33 pp.
 CODEN: EPXXDW
 DOCUMENT TYPE: Patent
 LANGUAGE: English
 FAMILY ACC. NUM. COUNT: 1
 PATENT INFORMATION:

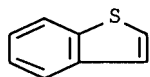
PATENT NO. -----	KIND ----	DATE -----	APPLICATION NO. -----	DATE
EP 1458048	A1	20040915	EP 2003-90262	200308 21
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R: AT, BE, CH, DE, DK, ES, FR, GB, GR, IT, LI, LU, NL, SE, MC, PT, IE, SI, LT, LV, FI, RO, MK, CY, AL, TR, BG, CZ, EE, HU, SK				
KR 2004080775	A	20040920	KR 2003-15749	200303 13
<--				
JP 2005108439	A	20050421	JP 2003-183239	200306 26
<--				
CN 1531134	A	20040922	CN 2003-155332	200308 27
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US 2004185347	A1	20040923	US 2003-658272	200309 10
<--				
PRIORITY APPLN. INFO.:			KR 2003-15749	A 200303 13
<--				

OTHER SOURCE(S): MARPAT 141:228183

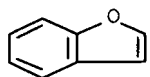
AB An electrolyte for a lithium secondary battery includes lithium salts, a nonaq. organic solvent, and additive compds. The additive compds. added to the electrolyte of the present invention decompose earlier than the organic solvent to form a conductive polymer layer on the surface of a pos. electrode, and prevent decomposition of the organic solvent. Accordingly, the electrolyte inhibits gas generation caused by decomposition of the organic solvent at initial charging, and thus reduces an increase of internal pressure and swelling during high temperature storage, and also improves safety of the battery during overcharge.

IT 95-15-8, Thianaphthene 271-89-6, 2,3-Benzofuran
 4265-27-4, 2-Butylbenzofuran 16851-82-4,
 1-(Phenylsulfonyl)pyrrole
 RL: MOA (Modifier or additive use); USES (Uses)
 (nonaq. electrolyte for lithium secondary
 battery)

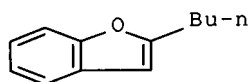
RN 95-15-8 HCAPLUS
 CN Benzo[b]thiophene (CA INDEX NAME)



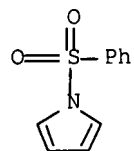
RN 271-89-6 HCAPLUS
CN Benzofuran (CA INDEX NAME)



RN 4265-27-4 HCAPLUS
CN Benzofuran, 2-butyl- (CA INDEX NAME)



RN 16851-82-4 HCAPLUS
CN 1H-Pyrrole, 1-(phenylsulfonyl)- (CA INDEX NAME)



IC ICM H01M010-40
CC 52-2 (Electrochemical, Radiational, and Thermal Energy Technology)
ST **nonaq electrolyte** lithium secondary battery;
safety **nonaq electrolyte** lithium secondary
battery
IT Secondary batteries
(lithium; **nonaq. electrolyte** for lithium
secondary battery)
IT Battery **electrolytes**
Conducting polymers
Safety
Swelling, physical
(**nonaq. electrolyte** for lithium secondary
battery)
IT Aromatic hydrocarbons, uses
Esters, uses
Ethers, uses
Ketones, uses
RL: DEV (Device component use); USES (Uses)
(**nonaq. electrolyte** for lithium secondary
battery)

IT Lithium alloy, base
RL: DEV (Device component use); USES (Uses)
(**nonaq. electrolyte** for lithium secondary battery)

IT 67-71-0, Methylsulfone 71-43-2, Benzene, uses 77-77-0, Vinylsulfone 96-49-1, Ethylene carbonate 105-58-8, Diethyl carbonate 108-32-7, Propylene carbonate 108-88-3, Toluene, uses 126-33-0, Tetramethylene sulfone 127-63-9, Phenylsulfone 462-06-6, Fluorobenzene 463-79-6D, Carbonic acid, chain ester 463-79-6D, Carbonic acid, cyclic ester 463-79-6D, Carbonic acid, ester 616-38-6, Dimethyl carbonate 620-32-6, Benzylsulfone 623-53-0, Methyl ethyl carbonate 623-96-1, Dipropyl carbonate 1330-20-7, Xylene, uses 1889-59-4, Ethylvinylsulfone 3680-02-2, Methylvinylsulfone 4437-85-8, Butylene carbonate 5535-43-3, m-ChloroPhenyl vinyl sulfone 5535-48-8, Phenylvinylsulfone 7439-93-2, Lithium, uses 7447-41-8, Lithium chloride (LiCl), uses 7791-03-9, Lithium perchlorate 10377-51-2, Lithium iodide 14024-11-4, Aluminum lithium chloride $AlLiCl_4$ 14283-07-9, Lithium tetrafluoroborate 18424-17-4, Lithium hexafluoroantimonate 21324-40-3, Lithium hexafluorophosphate 27359-10-0, Trifluorotoluene 28122-14-7, p-FluoroPhenyl vinyl sulfone 28452-93-9, Butadiene sulfone 29935-35-1, Lithium hexafluoroarsenate 33454-82-9, Lithium triflate 35363-40-7, Ethyl propyl carbonate, uses 37220-89-6, Aluminum lithium oxide 39300-70-4, Lithium nickel oxide 56525-42-9, Methyl propyl carbonate, uses 90076-65-6 131651-65-5, Lithium nonafluorobutanesulfonate 162684-16-4, Lithium manganese nickel oxide
RL: DEV (Device component use); USES (Uses)
(**nonaq. electrolyte** for lithium secondary battery)

IT 80-05-7, Bisphenol A, uses 95-15-8, Thianaphthene 117-80-6, 2,3-Dichloro-1,4-naphthoquinone 271-89-6, 2,3-Benzofuran 524-42-5, 1,2-Naphthoquinone 625-86-5, 2,5-Dimethylfuran 693-98-1, 2-Methylimidazole 1192-62-7, 2-Acetylfuran 1193-79-9, 2-Acetyl-5-methylfuran 4265-27-4, 2-Butylbenzofuran 7474-83-1, 3-Bromo-1,2-naphthoquinone 13243-65-7, 2,3-Dibromo-1,4-naphthoquinone 16851-82-4, 1-(Phenylsulfonyl)pyrrole
RL: MOA (Modifier or additive use); USES (Uses)
(**nonaq. electrolyte** for lithium secondary battery)

REFERENCE COUNT: 10 THERE ARE 10 CITED REFERENCES AVAILABLE FOR THIS RECORD. ALL CITATIONS AVAILABLE IN THE RE FORMAT

L42 ANSWER 6 OF 14 HCAPLUS COPYRIGHT 2007 ACS on STN
ACCESSION NUMBER: 2003:633136 HCAPLUS Full-text
DOCUMENT NUMBER: 139:152388
TITLE: **Nonaqueous electrolyte**
compositions for lithium secondary batteries
INVENTOR(S): Song, Eui-hwan; Jung, Won-il; Hwang, Duck-chul
PATENT ASSIGNEE(S): Samsung Sdi Co., Ltd., S. Korea
SOURCE: U.S. Pat. Appl. Publ., 5 pp., Cont.-in-part of U.S. Ser. No. 565,158, abandoned.
CODEN: USXXCO
DOCUMENT TYPE: Patent
LANGUAGE: English
FAMILY ACC. NUM. COUNT: 1
PATENT INFORMATION:

PATENT NO.	KIND	DATE	APPLICATION NO.	DATE
US 2003152840	A1	20030814	US 2002-278354	20021022
US 7150944	B2	20061219	US 2000-565158	20000503

PRIORITY APPLN. INFO.: <--

AB Disclosed are **nonaq. electrolyte** compns. of the present invention that comprise **nonaq. solvents** and monomers such as aniline, phenanthrene, ethylenedioxythiophene, benzothiophene or derivs. thereof. The monomers are contained in the electrolytes of the present invention in the amts. of less than about 5.0 weight% of the **nonaq. solvent**. In the present invention, cyclic carbonates, linear carbonates or mixts. thereof can be used as the **nonaq. solvents**. The electrolyte compns. of the present invention improve the safety characteristics of the cell by preventing the flow of large currents resulting from overcharge or feed-through, and also improve cell life characteristic by helping the reversible transfer of lithium ions.

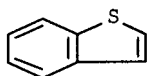
IT 95-15-8, Benzothiophene

RL: MOA (Modifier or additive use); USES (Uses)

(**nonaq. electrolyte** compns. for lithium secondary batteries)

RN 95-15-8 HCAPLUS

CN Benzo[b]thiophene (CA INDEX NAME)



IC ICM H01M010-40

ICS H01M004-60; H01M004-58

INCL 429338000; X42-934.2; X42-921.3; X42-923.14

CC 52-2 (Electrochemical, Radiational, and Thermal Energy Technology)

Section cross-reference(s): 38

ST **nonaq electrolyte** compn lithium secondary battery; safety **nonaq electrolyte** compn lithium secondary battery

IT Carbonaceous materials (technological products)

RL: MOA (Modifier or additive use); SPN (Synthetic preparation);

PREP (Preparation); USES (Uses)

(graphitized; **nonaq. electrolyte** compns. for lithium secondary batteries)

IT Secondary batteries

(lithium; **nonaq. electrolyte** compns. for lithium secondary batteries)

IT Pitch fibers

(mesophase; **nonaq. electrolyte** compns. for lithium secondary batteries)

IT Battery **electrolytes**

Carbonization

Conducting polymers

Graphitization

(**nonaq. electrolyte** compns. for lithium secondary batteries)

IT 7782-42-5, Graphite, uses
RL: DEV (Device component use); USES (Uses)
(**nonaq. electrolyte** compns. for lithium secondary)

IT 96-49-1, Ethylene carbonate 105-58-8, Diethyl carbonate
623-53-0, Ethyl methyl carbonate 7791-03-9, Lithium perchlorate
14283-07-9, Lithium tetrafluoroborate 21324-40-3, Lithium
hexafluorophosphate 29935-35-1, Lithium hexafluoroarsenate
33454-82-9, Lithium triflate 210353-06-3, Cobalt lithium nickel
strontium oxide
RL: DEV (Device component use); USES (Uses)
(**nonaq. electrolyte** compns. for lithium secondary batteries)

IT 85-01-8, Phenanthrene, uses 95-15-8, Benzothiophene
126213-51-2, Poly(Ethylenedioxythiophene)
RL: MOA (Modifier or additive use); USES (Uses)
(**nonaq. electrolyte** compns. for lithium secondary batteries)

REFERENCE COUNT: 19 THERE ARE 19 CITED REFERENCES AVAILABLE
FOR THIS RECORD. ALL CITATIONS AVAILABLE
IN THE RE FORMAT

L42 ANSWER 7 OF 14 HCAPLUS COPYRIGHT 2007 ACS on STN

ACCESSION NUMBER: 2003:56664 HCAPLUS Full-text

DOCUMENT NUMBER: 138:109598

TITLE: Secondary **nonaqueous-electrolyte** battery containing aromatic
additive for conducting polymer generation

INVENTOR(S): Kozuki, Kiyomi; Hojo, Nobuhiko; Morikawa,
Norimoto; Eda, Nobuo

PATENT ASSIGNEE(S): Matsushita Electric Industrial Co., Ltd., Japan

SOURCE: Jpn. Kokai Tokkyo Koho, 10 pp.

CODEN: JKXXAF

DOCUMENT TYPE: Patent

LANGUAGE: Japanese

FAMILY ACC. NUM. COUNT: 1

PATENT INFORMATION:

PATENT NO.	KIND	DATE	APPLICATION NO.	DATE
JP 2003022838	A	20030124	JP 2001-207502	20010709

PRIORITY APPLN. INFO.: JP 2001-207502

20010709

AB The title battery is equipped with a porous polyolefin separator and a **nonaq. electrolyte** containing an aromatic additive which polymerizes under overcharging at battery voltage higher than maximum working voltage and a part of the generated polymer is oxidized under further increase of voltage to give a conducting polymer by doping of an electrolyte anion to a generated pos. charge for internal short circuit generation. The separator has pore nos. ≤ 100 nos./ μm^2 measured by the author's method based on a.c. resistance. The battery provides high safety under overcharging at high temperature

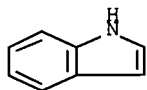
IT 120-72-9, Indole, uses

RL: DEV (Device component use); MOA (Modifier or additive use); USES
(Uses)

(battery containing porous polyolefin separator and
electrolyte containing aromatic additive for conducting polymer
generation)

RN 120-72-9 HCAPLUS

CN 1H-Indole (CA INDEX NAME)



IC ICM H01M010-40

ICS H01M002-18

CC 52-2 (Electrochemical, Radiational, and Thermal Energy Technology)

ST arom additive conducting polymer **nonaq electrolyte**

secondary battery; porous polyolefin separator nonaq battery safety

IT 84-15-1, o-Terphenyl 92-52-4, Biphenyl, uses 101-84-8, Diphenyl

ether 110-00-9, Furan 110-02-1, Thiophene 120-72-9,

Indole, uses 827-52-1, Phenylcyclohexane 17249-80-8,

3-Chlorothiophene

RL: DEV (Device component use); MOA (Modifier or additive use); USES
(Uses)

(battery containing porous polyolefin separator and
electrolyte containing aromatic additive for conducting polymer
generation)

L42 ANSWER 8 OF 14 HCAPLUS COPYRIGHT 2007 ACS on STN

ACCESSION NUMBER: 2002:714433 HCAPLUS Full-text

DOCUMENT NUMBER: 137:250260

TITLE: Secondary **nonaqueous**

electrolyte battery

INVENTOR(S): Kuranaka, Satoshi; Bito, Yasuhiko; Kouduki,

Kiyomi; Takahashi, Shozo; Eda, Nobuo

PATENT ASSIGNEE(S): Matsushita Electric Industrial Co., Ltd., Japan

SOURCE: Jpn. Kokai Tokkyo Koho, 9 pp.

CODEN: JKXXAF

DOCUMENT TYPE: Patent

LANGUAGE: Japanese

FAMILY ACC. NUM. COUNT: 1

PATENT INFORMATION:

PATENT NO.	KIND	DATE	APPLICATION NO.	DATE
JP 2002270223	A	20020920	JP 2001-63065	20010307

PRIORITY APPLN. INFO.:

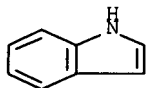
JP 2001-63065

20010307

AB The battery has a **nonaq. electrolyte** solution containing an aromatic additive selected from biphenyl, furan, thiophene, and their derivs.; and a porous polyolefin separator, which has a gas permeability 250-800 s/100 mL (JIS P8117-1998), after holding in a 110° atmospheric for 15 min while stretched at 25 kg/cm²

in its length direction, or after holding in a 130° atmospheric for 15 min while stretched at 25 kg/cm² in its width direction.

IT 120-72-9, Indole, uses
 RL: DEV (Device component use); USES (Uses)
 (electrolyte solns. containing aromatic additives for
 secondary lithium batteries)
 RN 120-72-9 HCAPLUS
 CN 1H-Indole (CA INDEX NAME)



IC ICM H01M010-40
 ICS H01M002-16; H01M002-18
 CC 52-2 (Electrochemical, Radiational, and Thermal Energy Technology)
 ST secondary nonaq battery electrolyte soln arom
 additive; biphenyl secondary nonaq battery
 electrolyte soln additive; furan secondary nonaq
 battery electrolyte soln additive; thiophene secondary
 nonaq battery electrolyte soln additive;
 polyolefin separator gas permeability secondary nonaq battery
 IT 92-52-4, Biphenyl, uses 96-49-1, Ethylene carbonate 110-00-9,
 Furan 120-72-9, Indole, uses 623-53-0, Ethyl methyl
 carbonate 17249-80-8, 3-Chlorothiophene 21324-40-3, Lithium
 hexafluorophosphate
 RL: DEV (Device component use); USES (Uses)
 (electrolyte solns. containing aromatic additives for
 secondary lithium batteries)

L42 ANSWER 9 OF 14 HCAPLUS COPYRIGHT 2007 ACS on STN
 ACCESSION NUMBER: 2002:693347 HCAPLUS Full-text
 DOCUMENT NUMBER: 137:204003
 TITLE: Secondary battery with nonaqueous
 electrolyte containing aromatic compound
 INVENTOR(S): Kozuki, Kiyomi; Eda, Nobuo; Takahashi, Shozo;
 Bito, Yasuhiko; Kuranaka, Satoshi
 PATENT ASSIGNEE(S): Matsushita Electric Industrial Co., Ltd., Japan
 SOURCE: Jpn. Kokai Tokkyo Koho, 9 pp.
 CODEN: JKXXAF
 DOCUMENT TYPE: Patent
 LANGUAGE: Japanese
 FAMILY ACC. NUM. COUNT: 1
 PATENT INFORMATION:

PATENT NO.	KIND	DATE	APPLICATION NO.	DATE
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JP 2002260627	A	20020913	JP 2001-59610	200103 05

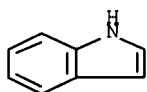
PRIORITY APPLN. INFO.: JP 2001-59610
 200103
 05

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AB The title battery is equipped with a **nonaq. electrolyte** containing biphenyl, furan, thiophene, and/or its derivative and a porous polyolefin separator having shrinkage 12-25% in the width direction of mech. elongation after adding tensile load 25 kg/cm² in the longitudinal direction of mech. elongation at 120° under atmospheric for 15 min. Alternatively, the battery is equipped with a porous polyolefin separator having the shrinkage 26-40% supported with an insulating part having heat-resistant strength higher than the separator. The battery has high safety during overcharging under high temperature

IT 120-72-9, Indole, uses
 RL: DEV (Device component use); MOA (Modifier or additive use); USES (Uses)
 (battery with **nonaq. electrolyte** containing aromatic compound and polyolefin separator for overcharging safety)

RN 120-72-9 HCAPLUS
 CN 1H-Indole (CA INDEX NAME)



IC ICM H01M002-16
 ICS H01M010-40

CC 52-2 (Electrochemical, Radiational, and Thermal Energy Technology)

ST arom compd **nonaq electrolyte** battery polyolefin separator safety

IT Battery **electrolytes**
 Safety
 Secondary battery separators
 (battery with **nonaq. electrolyte** containing aromatic compound and polyolefin separator for overcharging safety)

IT Polyolefins
 RL: DEV (Device component use); USES (Uses)
 (battery with **nonaq. electrolyte** containing aromatic compound and polyolefin separator for overcharging safety)

IT Secondary batteries
 (lithium; battery with **nonaq. electrolyte** containing aromatic compound and polyolefin separator for overcharging safety)

IT 9002-88-4, Polyethylene
 RL: DEV (Device component use); USES (Uses)
 (HDPE; battery with **nonaq. electrolyte** containing aromatic compound and polyolefin separator for overcharging safety)

IT 92-52-4, Biphenyl, uses 110-00-9, Furan 120-72-9, Indole, uses 17249-80-8, 3-Chlorothiophene
 RL: DEV (Device component use); MOA (Modifier or additive use); USES (Uses)
 (battery with **nonaq. electrolyte** containing aromatic compound and polyolefin separator for overcharging safety)

IT 9003-07-0, Polypropylene
 RL: DEV (Device component use); USES (Uses)
 (separator support; battery with **nonaq. electrolyte** containing aromatic compound and polyolefin separator for overcharging safety)

TITLE: Secondary battery with **nonaqueous electrolyte** containing aromatic compound
 INVENTOR(S): Koduki, Kiyomi; Bito, Yasuhiko; Takahashi, Shozo; Eda, Nobuo; Kuranaka, Satoshi
 PATENT ASSIGNEE(S): Matsushita Electric Industrial Co., Ltd., Japan
 SOURCE: Jpn. Kokai Tokkyo Koho, 9 pp.
 CODEN: JKXXAF
 DOCUMENT TYPE: Patent
 LANGUAGE: Japanese
 FAMILY ACC. NUM. COUNT: 1
 PATENT INFORMATION:

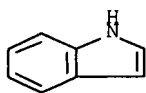
PATENT NO. -----	KIND ----	DATE -----	APPLICATION NO. -----	DATE
JP 2002260626	A	20020913	JP 2001-59609	200103 05

PRIORITY APPLN. INFO.: <-- JP 2001-59609
 200103
 05

AB The title battery is equipped with a **nonaq. electrolyte** containing biphenyl, furan, thiophene, and/or its derivative and a porous polyolefin separator having total pore volume 0.3-1.5 cm³/g after adding tensile load 25 kg/cm² in the longitudinal direction of mech. elongation at 110° under atmospheric for 15 min. The separator may have porosity 20-70%. The battery has high safety during overcharging under high temperature

IT **120-72-9**, Indole, uses
 RL: DEV (Device component use); MOA (Modifier or additive use); USES (Uses)
 (battery with **nonaq. electrolyte** containing aromatic compound and polyolefin separator for overcharging safety)

RN 120-72-9 HCAPLUS
 CN 1H-Indole (CA INDEX NAME)



IC ICM H01M002-16
 ICS H01M010-40
 CC 52-2 (Electrochemical, Radiational, and Thermal Energy Technology)
 ST arom compd **nonaq electrolyte** battery polyolefin separator safety
 IT Battery **electrolytes**
 Safety
 Secondary battery separators
 (battery with **nonaq. electrolyte** containing aromatic compound and polyolefin separator for overcharging safety)
 IT Polyolefins
 RL: DEV (Device component use); USES (Uses)
 (battery with **nonaq. electrolyte** containing aromatic compound and polyolefin separator for overcharging safety)
 IT Secondary batteries
 (lithium; battery with **nonaq. electrolyte**)

containing aromatic compound and polyolefin separator for overcharging safety)

IT 9002-88-4, Polyethylene

RL: DEV (Device component use); USES (Uses)

(HDPE; battery with **nonaq. electrolyte** containing

aromatic compound and polyolefin separator for overcharging safety)

IT 92-52-4, Biphenyl, uses 110-00-9, Furan 120-72-9,

Indole, uses 17249-80-8, 3-Chlorothiophene

RL: DEV (Device component use); MOA (Modifier or additive use); USES (Uses)

(battery with **nonaq. electrolyte** containing aromatic

compound and polyolefin separator for overcharging safety)

L42 ANSWER 11 OF 14 HCAPLUS COPYRIGHT 2007 ACS on STN

ACCESSION NUMBER: 2002:522266 HCAPLUS Full-text

DOCUMENT NUMBER: 137:81379

TITLE: **Nonaqueous electrolyte**

secondary battery

INVENTOR(S): Watanabe, Shoichiro; Ohira, Noriyuki

PATENT ASSIGNEE(S): Matsushita Electric Industrial Co., Ltd., Japan;
Ube Industries, Ltd.

SOURCE: PCT Int. Appl., 31 pp.

CODEN: PIXXD2

DOCUMENT TYPE: Patent

LANGUAGE: Japanese

FAMILY ACC. NUM. COUNT: 1

PATENT INFORMATION:

PATENT NO.	KIND	DATE	APPLICATION NO.	DATE
WO 2002054524	A1	20020711	WO 2001-JP10655	20011205

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W: CN, JP, KR, US				
RW: AT, BE, CH, CY, DE, DK, ES, FI, FR, GB, GR, IE, IT, LU, MC, NL, PT, SE, TR				
EP 1256995	A1	20021113	EP 2001-272801	20011205

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R: AT, BE, CH, DE, DK, ES, FR, GB, GR, IT, LI, LU, NL, SE, MC, PT, IE, FI, CY, TR				
TW 529201	B	20030421	TW 2001-90130216	20011206

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US 2003091892	A1	20030515	US 2002-203237	20020806
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US 7201994	B2	20070410		
PRIORITY APPLN. INFO.:			JP 2000-402935	A
				20001228

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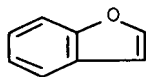
			WO 2001-JP10655	W
				20011205

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AB The battery has a cathode containing a cathode composite layer on an cathode collector; an anode containing an anode composite layer on an anode collector where ≥ 1 of cathode and anode has a pos. resistance temperature coefficient; and a **nonaq. electrolyte** stable at a normal operating voltage of the battery, and containing a polymerizing additive at a voltage exceeding the maximum value of the operating voltage. The resistance value for cathode and/or anode at 110-130° is ≥ 100 times higher than that at 25°, and $\geq 107\Omega$ at 120°. The additive may be biphenyl, 3-chloro-thiophene, furan, o-terphenyl, m-terphenyl, p-terphenyl, diphenylether, 2,3-benzofuran, bis (p-tril) ether, diarylether, arylbuthylether, 3-phenoxytoluene or cyclohexylbenzene.

IT 271-89-6, 2,3-Benzofuran
RL: MOA (Modifier or additive use); USES (Uses)
(additives for lithium battery **electrolytes**)

RN 271-89-6 HCAPLUS
CN Benzofuran (CA INDEX NAME)



IC ICM H01M010-40
ICS H01M004-02; H01M004-66

CC 52-2 (Electrochemical, Radiational, and Thermal Energy Technology)

ST additive **nonaq electrolyte** resistance layer
lithium battery; pos resistance temp coeff anode cathode collector
lithium battery

IT 84-15-1, o-Terphenyl 92-06-8, m-Terphenyl 92-52-4, Biphenyl,
uses 92-94-4, p-Terphenyl 101-84-8, Di-phenylether 110-00-9,
Furan 271-89-6, 2,3-Benzofuran 3586-14-9,
3-Phenoxytoluene 17249-80-8, 3-Chloro-thiophene
RL: MOA (Modifier or additive use); USES (Uses)
(additives for lithium battery **electrolytes**)

REFERENCE COUNT: 10 THERE ARE 10 CITED REFERENCES AVAILABLE
FOR THIS RECORD. ALL CITATIONS AVAILABLE
IN THE RE FORMAT

L42 ANSWER 12 OF 14 HCAPLUS COPYRIGHT 2007 ACS on STN

ACCESSION NUMBER: 2001:46267 HCAPLUS Full-text

DOCUMENT NUMBER: 134:118341

TITLE: Secondary **nonaqueous**
electrolyte batteries using improved
anodes and electrolytes, and manufacture of the
batteries

INVENTOR(S): Maekawa, Yukio

PATENT ASSIGNEE(S): Fuji Photo Film Co., Ltd., Japan

SOURCE: Jpn. Kokai Tokkyo Koho, 13 pp.
CODEN: JKXXAF

DOCUMENT TYPE: Patent

LANGUAGE: Japanese

FAMILY ACC. NUM. COUNT: 1

PATENT INFORMATION:

PATENT NO.	KIND	DATE	APPLICATION NO.	DATE
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JP 2001015172

A

20010119

JP 1999-240599

199908

26

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PRIORITY APPLN. INFO.:

JP 1999-118296

A

199904

26

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AB Secondary **nonaq. electrolyte** batteries have cathode sheets containing Li-containing mixed rare earth oxides as active materials, anode sheets containing Li-intercalatable C materials and having auxiliary layers bonded to Li-based metal foils, and **nonaq. electrolytes** containing Li salts and additives selected from hydrazines and aromatic compds. The battery components are assembled and aged for permeation of Li into the anodes to give the secondary batteries. The batteries have high capacity.

IT 95-15-8, Benzothiophene 271-89-6, Benzofuran

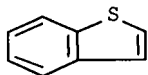
RL: DEV (Device component use); MOA (Modifier or additive use); USES (Uses)

(**electrolyte** solns. containing; secondary **nonaq.**

electrolyte batteries using anodes bonded to Li-containing foils and **electrolytes** containing hydrazines and/or aromatic compds.)

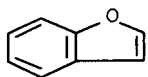
RN 95-15-8 HCAPLUS

CN Benzo[b]thiophene (CA INDEX NAME)



RN 271-89-6 HCAPLUS

CN Benzofuran (CA INDEX NAME)



IC ICM H01M010-40

ICS H01M010-40; H01M004-02; H01M004-58

CC 52-2 (Electrochemical, Radiational, and Thermal Energy Technology)

ST **nonaq electrolyte** battery anode carbon lithium;

hydrazine **nonaq electrolyte** lithium battery;

arom compd **nonaq electrolyte** lithium battery

IT Carbonaceous materials (technological products)

RL: DEV (Device component use); USES (Uses)

(anodes; secondary **nonaq. electrolyte**

batteries using anodes bonded to Li-containing foils and electrolytes containing hydrazines and/or aromatic compds.)

IT Heterocyclic compounds

RL: DEV (Device component use); MOA (Modifier or additive use); USES

(Uses)

(aromatic; secondary **nonaq. electrolyte**

batteries using anodes bonded to Li-containing foils and electrolytes containing hydrazines and/or aromatic compds.)

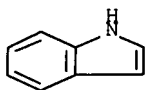
- IT Aromatic compounds
RL: DEV (Device component use); MOA (Modifier or additive use); USES (Uses)
(heterocyclic; secondary **nonaq. electrolyte** batteries using anodes bonded to Li-containing foils and electrolytes containing hydrazines and/or aromatic compds.)
- IT Secondary batteries
(lithium; secondary **nonaq. electrolyte** batteries using anodes bonded to Li-containing foils and electrolytes containing hydrazines and/or aromatic compds.)
- IT Carbon fibers, uses
RL: DEV (Device component use); USES (Uses)
(mesophase pitch-based, anodes; secondary **nonaq. electrolyte** batteries using anodes bonded to Li-containing foils and electrolytes containing hydrazines and/or aromatic compds.)
- IT Battery anodes
Battery cathodes
Battery **electrolytes**
(secondary **nonaq. electrolyte** batteries using anodes bonded to Li-containing foils and electrolytes containing hydrazines and/or aromatic compds.)
- IT 7440-44-0, Carbon, uses 7782-42-5, Graphite, uses
RL: DEV (Device component use); USES (Uses)
(anodes; secondary **nonaq. electrolyte** batteries using anodes bonded to Li-containing foils and electrolytes containing hydrazines and/or aromatic compds.)
- IT 12190-79-3, Cobalt lithium oxide (colio2)
RL: DEV (Device component use); USES (Uses)
(cathodes; secondary **nonaq. electrolyte** batteries using anodes bonded to Li-containing foils and electrolytes containing hydrazines and/or aromatic compds.)
- IT 95-15-8, Benzothiophene 260-94-6, Acridine
271-89-6, Benzofuran 2171-74-6, Catechol cyclic carbonate
15429-36-4
RL: DEV (Device component use); MOA (Modifier or additive use); USES (Uses)
(**electrolyte** solns. containing; secondary **nonaq. electrolyte** batteries using anodes bonded to Li-containing foils and **electrolytes** containing hydrazines and/or aromatic compds.)
- IT 96-49-1, Ethylene carbonate 105-58-8, Diethyl carbonate
108-32-7, Propylene carbonate
RL: DEV (Device component use); USES (Uses)
(**electrolyte** solns.; secondary **nonaq. electrolyte** batteries using anodes bonded to Li-containing foils and electrolytes containing hydrazines and/or aromatic compds.)
- IT 14283-07-9, Lithium tetrafluoroborate 21324-40-3, Lithium hexafluorophosphate
RL: DEV (Device component use); USES (Uses)
(**electrolyte**; secondary **nonaq. electrolyte** batteries using anodes bonded to Li-containing foils and electrolytes containing hydrazines and/or aromatic compds.)
- IT 7439-93-2, Lithium, uses
RL: DEV (Device component use); USES (Uses)
(foil; secondary **nonaq. electrolyte** batteries using anodes bonded to Li-containing foils and electrolytes containing hydrazines and/or aromatic compds.)

DOCUMENT NUMBER: 132:328238
 TITLE: A comparative study of a polyindole-based microelectrochemical transistor in aqueous and **non-aqueous electrolytes**
 AUTHOR(S): Saxena, Vibha; Shirodkar, Vinay; Prakash, Rajiv
 CORPORATE SOURCE: Institute of Science, Mumbai, 400032, India
 SOURCE: Journal of Solid State Electrochemistry (2000), 4(4), 231-233
 CODEN: JSSEFS; ISSN: 1432-8488
 PUBLISHER: Springer-Verlag
 DOCUMENT TYPE: Journal
 LANGUAGE: English

AB The behavior of a polyindole-based microelectrochem. transistor in aqueous and **non-aqueous electrolytes** is described. The polyindole film was grown onto two closely spaced (100 μ m) platinum microelectrodes by anodic oxidation of indole (10 mM) from 0.1 M tetrabutylammonium perchlorate in dichloromethane at 1.1 V vs. Ag/AgCl. The polymerization was carried out for a sufficiently long time in order to connect both Pt microelectrodes, which operated as a transistor when immersed in an electrolytic solution. In this transistor, one microelectrode was a "source" and the other a "drain"; the Ag/AgCl wire reference electrode was used as a "gate". The drain current (current between source and drain) was modulated by varying the gate potential (potential between source and gate) at a fixed drain potential (potential between source and drain). The transconductances of the transistor were estimated as 0.98 mS/cm and 20.6 mS/cm of channel width (separation between two microelectrodes) in aqueous and non-aqueous solns., resp.

IT 120-72-9, Indole, reactions
 RL: RCT (Reactant); RACT (Reactant or reagent)
 (anodization for polymerization; a comparative study of a polyindole-based microelectrochem. transistor in aqueous and **non-aqueous electrolytes**)

RN 120-72-9 HCAPLUS
 CN 1H-Indole (CA INDEX NAME)



CC 76-3 (Electric Phenomena)
 Section cross-reference(s): 72

ST polyindole **electrolyte** aq **nonaq** microelectrochem transistor; anodization indole polyindole film deposition transistor

IT Drain current
 Electrolytic solutions
 Reference electrodes
 (a comparative study of a polyindole-based microelectrochem. transistor in aqueous and **non-aqueous electrolytes**)

IT **Electrolytes**
 (aqueous/**non-aqueous**; a comparative study of a polyindole-based microelectrochem. transistor in aqueous and **non-aqueous electrolytes**)

IT Electric current-potential relationship
 (drain current; a comparative study of a polyindole-based microelectrochem. transistor in aqueous and **non-aq . electrolytes**)

IT Microelectrodes
(platinum, for polyindole deposition; a comparative study of a polyindole-based microelectrochem. transistor in aqueous and **non-aqueous electrolytes**)

IT Transistors
(polyindole, microelectrochem.; a comparative study of a polyindole-based microelectrochem. transistor in aqueous and **non-aqueous electrolytes**)

IT Transconductance
(transistors; a comparative study of a polyindole-based microelectrochem. transistor in aqueous and **non-aq . electrolytes**)

IT 120-72-9, Indole, reactions
RL: RCT (Reactant); RACT (Reactant or reagent)
(anodization for polymerization; a comparative study of a polyindole-based microelectrochem. transistor in aqueous and **non-aqueous electrolytes**)

IT 82451-55-6P, Polyindole
RL: DEV (Device component use); PEP (Physical, engineering or chemical process); PNU (Preparation, unclassified); PRP (Properties); TEM (Technical or engineered material use); PREP (Preparation); PROC (Process); USES (Uses)
(semiconductor; a comparative study of a polyindole-based microelectrochem. transistor in aqueous and **non-aq . electrolytes**)

REFERENCE COUNT: 12 THERE ARE 12 CITED REFERENCES AVAILABLE FOR THIS RECORD. ALL CITATIONS AVAILABLE IN THE RE FORMAT

L42 ANSWER 14 OF 14 HCAPLUS COPYRIGHT 2007 ACS on STN

ACCESSION NUMBER: 2000:133026 HCAPLUS Full-text

DOCUMENT NUMBER: 132:154449

TITLE: Secondary **nonaqueous electrolyte** batteries

INVENTOR(S): Takahashi, Masatoshi; Yasutake, Zensaku; Abe, Hiroshi; Ueki, Akira; Takai, Tsutomu

PATENT ASSIGNEE(S): Sanyo Electric Co., Ltd., Japan; Ube Industries, Ltd.

SOURCE: Jpn. Kokai Tokkyo Koho, 15 pp.

CODEN: JKXXAF

DOCUMENT TYPE: Patent

LANGUAGE: Japanese

FAMILY ACC. NUM. COUNT: 1

PATENT INFORMATION:

PATENT NO. -----	KIND ----	DATE -----	APPLICATION NO. -----	DATE
JP 2000058117	A	20000225	JP 1998-218001	199807 31
			<--	
JP 2983205	B2	19991129		
PRIORITY APPLN. INFO.:			JP 1998-218001	199807 31
			<--	

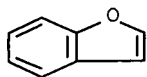
OTHER SOURCE(S): MARPAT 132:154449

AB The batteries use an electrolyte solution containing a Li salt dissolved in an aromatic ether ROR', where R = C₆H₅, allyl, or alkylphenyl group; R' = C₁-6 alkyl, Ph, allyl, or alkylphenyl group; and R and R' may form a C₅-6 ring.

IT 271-89-6, Benzofuran
RL: MOA (Modifier or additive use); USES (Uses)
(**electrolyte** solvents containing aromatic ether derivs. for secondary lithium batteries)

RN 271-89-6 HCAPLUS

CN Benzofuran (CA INDEX NAME)



IC ICM H01M010-40

CC 52-2 (Electrochemical, Radiational, and Thermal Energy Technology)

IT 101-84-8, Diphenyl ether 271-89-6, Benzofuran 557-40-4,
Diallyl ether 1579-40-4 3586-14-9 3739-64-8, Butyl allyl ether

RL: MOA (Modifier or additive use); USES (Uses)
(**electrolyte** solvents containing aromatic ether derivs. for secondary lithium batteries)

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